Eagle 760

Owner's Manual

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To re-order this document, request part number DSM-00229-00

FCC Notice

This equipment is assembled from components that have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

Avis de Conformité aux Normes du Ministère des Communications du Canada

Cet équipment ne deapsse pas les limits de Classe A d'émission de bruits radioélectriques pour les appareils numeriques tels que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milleu résidential peut entrainer le brouillage des réceptions radio et tele, ce qui obligerait le propriétaire ou l'opératour à pendre les dispositions nécessaires pour en éliminer les causes.

Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a replacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

This computer contains a 3-volt lithium battery. When necessary, replace the battery with Panasonic or Ray-O-Vac CR2032 only. Use of other batteries may present a risk of fire or explosion. Replacement batteries may be ordered from your authorized Alpha Micro reseller.

Safety Warning

This computer contains no user-configurable components that require opening the computer case. Because the power supply in this computer is capable of outputting high current levels hazardous to your safety, the computer case should only be opened by an authorized service technician.

Cet ordinateur ne contient aucune pièce configurable par l'utilisateur qui nécessite l'ouverture du boitier. L'alimentation de cet ordinateur peut preduire des nivaeux de tensions dangereux, le boitier ne devrait donc être ouvert que par un technician autoriaé.

SOFTWARE SECURITY DEVICE IDENTIFICATION NUMBER: _____

The Alpha Micro Software Security Device (SSD) is a customized integrated circuit that personalizes the computer, providing identity verification for it. Certain Alpha Micro and non-Alpha Micro software may require that your computer contain an SSD in order to run software that has been customized to run only on your computer.

Please enter the identification of your SSD above. The SSD identification number should be on your computer ID label under "SSD Serial No." (Another way of finding the number is to look at the SSD itself. The SSD is located in an integrated circuit location on the AM-113-XX board; its identification number is printed on the SSD itself.) Software vendors may ask you for the SSD number if they are customizing software to run only on your computer.

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Chapter 1 - Introducing Eagle 760 Systems

SYSTEM OVERVIEW

Alpha Microsystems has developed a new version of software to allow users to run AMOS on a standard PC running newer versions of Windows. These include Windows 7, Vista, XP Professional or Home Editions. This software will be known as AMPC 7.1 and is the main software component to the Eagle 760 System. The AMOS 8.2 operating system software is included with each Eagle 760 system. This allows VARs and end users to run a wide range of business applications on the Alpha Micro supplied Eagle 760 system. AMOS 8.x has the power to support many users simultaneously, in local or networked configurations. The Eagle 760 Servers lend themselves to virtually any business data processing environment. The Eagle 760 System is a single processor system targeted at smaller, more cost sensitive installations. These Servers are many times faster than previous generation AMOS computers, yet compatible with legacy application software. The AM8000 and Eagle 800 systems are higher performance than the Eagle 760 system. Clients can start with the Eagle 760 system and upgrade to the higher performance AM9000,AM8000 or Eagle 900, Eagle 800 systems when you need more processing power. The Eagle 760 system is perfect for AMPC 5.0, 6.0 and 7.0 upgrade candidates.

The Eagle 760 Systems are constructed in modular fashion. Your organization can start with just the features and capacity needed, then expand the system as processing demands increase. The system can be field upgraded to provide more disk storage, memory, and tape backup capacity, to add more local cable-connected terminals and printers, to exchange data over a local area network with personal computers and other data processing systems and to communicate through modems with remote data centers.

The Eagle 760 System enclosures fit neatly next to a desk and can interface to RAID subsystems, USB disk devices, and USB serial devices. These Servers support DVD-RAM and Blu-Ray peripheral drives as well as SCSI tape and SCSI disk as optional equipment.

The low profile 2U-Rackmount chassis is available as an option.

Both of these systems use the USB-SSD dongle mounted inside the chassis to one of the USB ports. The dongle provides the SSD device that the AMPC operating systems is encoded.

Figure 1-1: Eagle 760 Deskside Chassis

Figure 1-2: Eagle 760 Low-Profile Rackmount Chassis

HARDWARE DETAILS

The Eagle 760 System uses state of the art high performance hardware that, when combined with our multi-user AMOS operating system software provides a new level of performance and added versatility. There are a number of physical components that go into the construction of your Eagle 760 System that provide the ability to process, input, display, and store data. Some of these components are interchangeable between system types. These include internal serial ports, disk drives, RAID subsystems, tape drives, CD-RW and DVD-RAM devices. The following sections highlight the major hardware components of the Eagle 760 Server family. For technical information on these devices, refer to the specification sheet supplied with your Server. Alpha Micro uses high performance AMD processors that are the best fit for AMOS 8.x compared to the lower performing Intel processors.

The Eagle 760 Server can now be provided with the USB-SSD security device instead of a Falcon board.

Eagle 760 Server System Board

The Single Processor system board provides the Eagle 760 with:

- One AMD (AM3) Sempron high speed processor
- Four SATA 3.0Gb/sec channels
- Fast Ethernet (100/10 Mbps) communication ports
- Two DDR DIMM sockets for support of up to 2GB of 1333mhz DDR3
- One 9-pin serial I/O port (with modem control)
- One 25-pin SPP/ECP/EPP parallel port
- Integrated video graphics controller for system display console
- PS/2 keyboard and mouse ports
- CPU temperature and voltage monitoring
- Four USB ports on the back and two on the front
- CMOS BIOS setup for configuration and boot options

Memory

The Eagle 760 System board has two sockets in which main memory DIMMs (Dual Inline Memory Modules) memory is used to a maximum of 4GB.

Most of this memory is used by the Windows 7 software and allocated for the page file and Disk Caching buffer. Currently the maximum memory allocatable to AMOS is 900MB. This is a Windows 7 restriction. Since DCACHE is not needed for AMOS this is not a problem.

See the specification sheet included with your computer for more detailed information on memory capacity, and the *Eagle 760 Computer Service Manual* for instructions on installing it.

Disk Configurations

The Eagle 760 System comes standard with a 160GB SATA Drive. This drive is partitioned into two logical drives of approximately 80Gb. The C: BootVolume contains the Windows 7 software and utility programs such as Acronis, Adobe 10.0 reader, AMPC 7.1 with the AMOS 8.x Operating System Software. The E: DataVolume drive is made available for the customer to create an **AMD** disk files for their operating application programs. Additionally, this volume contains a AMOSBackup folder, OSBackups with an image backup of the C: BootVolume as shipped from Alpha Micro. Larger drive sizes are available for the system, which can be ordered and integrated into the Eagle 760. At order time please provide Alpha Microsystems with the drive partition information you need.

All Eagle 760 Systems boot AMOS from an {**AMD**} pseudo disk file. This will be detailed in Chapter 3.

The Eagle 760 System has an optional SCSI interface controller normally used to provide a SCSI bus for an internally mounted streaming tape drive. This controller also has two SCSI busses. The second bus is available externally through the rear panel for external SCSI devices through a VHDCI connector.

Serial I/O Capability

In addition to the standard serial I/O ports previously described, other serial I/O ports can be added to the Eagle 760 System in a variety of ways.

The Eagle 760 System has two spare PCI bus slots on the main board, so you can install two 8-port PCI serial boards or one SCSI controller and one 8-port PCI serial board. You can also install two 8-port USB expansion boxes, but the maximum allowable PC serial port count is 18.

Parallel Printer Port

All Eagle 760 Systems have one industry standard parallel printer port. In most installations network printing is used so there is less need for local LPT ports. Refer to Appendix A for cabling info.

Network Hardware

All models of the Eagle 760 Systems contain an Ethernet port allowing AMOS access to a network. The system has one (10/100 Mbps) Ethernet port, which is mapped for use by AMOS.

Alpha Micro's latest networking software, AlphaTCP, and AlphaNET software are included within the AMOS 8.x Release. The driver for the Ethernet port allows both AlphaNET and AlphaTCP to function.

All models of the Eagle 760 System have the DHCP client enabled as shipped from Alpha Microsystems. If the user does not have a DHCP Server on site, then the Windows side of the Server must have a unique IP assigned. Refer to Chapter 6 for the procedure to assign an IP to Windows.

System Console & Diagnostic Status Display

A 17" LCD flat panel system console is optionally available with all Eagle 760 systems. The console monitor is required for the system operator to interface with the system. The AMOS 8.x system displays diagnostic information in the System Diagnostic window of the AMPC 7.1 program. The boot process displays the normal functions of the system in the diagnostic display window, as well as certain system errors. Normal messages appear in Black. Magenta color is for the AM-113 status code messages. Blue messages are for the Jobs that the monitor controls and internal tests that pass. Orange messages are for ports being initialized. The Red messages are errors. These will signify a problem with the Server configuration. These messages describe missing information or processes that have terminated.

There are multiple status diagnostic windows for additional information. The Network window is just for the Network interface and displays the different Ethernet interfaces, and which adapter is mapped for AMOS use. The SCSI window displays the current configured SCSI and ATAPI devices mapped for AMOS use.

Real Time Clock

The Eagle 760 Servers have a Real Time Clock with battery back up. The TIME and DATE may be set from OPR: as on any other Alpha Micro system. See the AMOS Command Reference manual for the format. The clock chip is physically on the main CPU board. The RTC is accessible from Windows control panel.

Rear I/O Panel

Refer to the figures in Chapter 2 for the different connectors and their functions.

Add-On Equipment

Since the Eagle 760 System is a multi-user business system, you will need to add terminals, PCs or Thin Clients via network connections or hard-wired serial connections to support these devices. You will probably want to also add one or more printers to provide printed copies of reports or documents, and perhaps a modem for serial data transmission via the telephone lines. Your Value Added Reseller (VAR) may have provided these items as part of your computer system purchase.

If you want to expand these Servers in the future by adding additional storage and backup devices, see the *Eagle 760 Service Manual* for a diagram of where additional peripherals should be located in the chassis.

SOFTWARE FEATURES

Computer hardware is all potential and no action until the software programs instruct it to do something.

The Eagle 760 Systems run the same AMOS 8.x dual operating system software that runs on the AM8000 and Eagle 800 systems. **Be warned**, do not try and mix the Eagle 760 software between the AM8000 series systems. Alpha Micro has implemented Software Security measures that insure the Eagle 760 software only works on the machine it was shipped from Alpha Microsystems. Most of the other AMOS programs are the same with a few exceptions.

The Eagle 760's underlying operating system is Windows 7 Home®, or Windows 7 Professional® and does the low level work for the AMOS 8.x system. This software component is referred to as "**Windows**". Windows provides disk caching, network, serial, USB, LPT ports, SCSI controllers, IDE devices, and video display drivers to AMOS 8.x. The Windows software is hidden from normal telnet users of AMOS, but not for the operator at the system console. The operator can use Windows to perform other Windows functions. If the windows application creates large amounts of system interrupts, this will affect the AMOS performance. If you play internet radio or streaming videos that require large amounts of CPU overhead, AMOS will slow down! If this is required Alpha Microsystems can provide a higher speed processor for the Eagle 760 system.

AMOS runs under the control of the AMPC.EXE program on the Windows side. The AMOS 8.x Operating System does all of the other functions that you are normally used to. Additionally, a special version of AMOS, called EAMOS (Embedded AMOS) boots up underneath AMPC software to provide access to AMOS controlled serial ports and the AMOS Software Security Device {SSD}.

EAMOS has been eliminated when using the USB-SSD security device.

Some of the features of the standard system software are listed below. Your VAR can provide software packages specifically suited to your needs, such as accounting software, programming languages, e-mail and fax packages, and so on. Those packages are not included in this list. See your VAR for information on service and support for such packages.

- The VAR can order the system with Windows 7 professional or Windows 7 Home edition either the 32-bit or the 64-bit versions.
- The AMOS 8.x operating system performs many functions, one of which is to manage the Server's resources so multiple users can run on the Server at the same time. Both AMOS and Windows also include all support software for the hardware devices mentioned above.
- Windows software for the control of the main board, including the main CPU & chipset drivers unique to each model.
- Acronis True Image Home 2011 for backup and restore of system volumes.
- EAMOS: Embedded AMOS controls Alpha Micro style serial ports and the SSD device.
- Adobe Acrobat 10.0 Reader to display online documentation.
- AlphaTCP allows your Alpha Micro Server to communicate using the popular TCP/IP protocol. This software allows you to connect to the Internet, send and receive mail, and transfer files.
- AlphaNET allows the Server to connect to older legacy AMOS computers. Serial and Ethernet networks are supported.
- Programs called "print spoolers" let you use one or more printers at the same time without tying up a user terminal.
- The Task Manager lets you schedule multiple background tasks to run without operator control at preset times and dates.

- A sophisticated command language allows you to invoke a stream of commands and program input (predefined by you) by entering a single command.
- The business-oriented AlphaBASIC and AlphaBASIC PLUS programming languages are uniquely suited to the programming of business applications software packages.
- ISAM (Indexed Sequential Access Method) Plus, a machine language file management system callable from AlphaBASIC or assembly language programs, provides a method for quick information organization and retrieval.
- AlphaFAX is optionally available for faxing documents to clients.
- The VUE screen-oriented text editor provides an easy-to-use tool for creating documents.
- A simple system initialization procedure allows you to quickly change the types of peripheral devices connected to the Server, change user memory allocations, and customize the Server to your exact needs.
- Support for many different kinds of printers and terminals give you the ability to define your own type of terminal or printer to the Server.
- The System Firewall has been enabled to protect the Windows system environment.

For an introduction to AMOS software, refer to Chapter 4, AMOS Overview that also provides a list of additional documentation available from Alpha Micro to assist you with specific information in your area of interest.

Software Compatibility

In general, a*ll non-hardware dependent AMOS code should work!*

The full AMOS 68000 instruction set and monitor calls are supported in all cases. When an unsupported (but formerly supported) instruction or monitor call is encountered, a message is displayed in the System Diagnostic window. Usually, no additional changes are made to registers, etc. Unsupported 68000 instructions will also generate an AMOS "Illegal Instruction" exception.

Important! If the system encounters an unsupported instruction or monitor call, or any other function that should be supported, that is causing a problem, please give Alpha Micro the specific details and why it is important. Since the instructions are emulated, changes could be made. The Eagle 760 Systems are not limited by the CPU chip instruction set!

AMOS 8.x currently does not support the following AMOS monitor calls (subject to change without notice):

- plock, punlok, prespn, posspn, spawn, kill

AMOS 8.x implements the Motorola 68000 microprocessor architecture with some additional capabilities (subject to change without notice):

- 68020 addressing modes are implemented
- 68020 integer multiply and divide instructions are implemented.
- All other 68020 and 68040 instructions are **not** implemented including:
    - cmp2, cas, cas2

- pack/unpack (not to be confused with the monitor calls of the same name)
- callm, rtm, chkxx, bkpt, trapcc
- All bit field instructions

AMOS 8.x denies 68020 capabilities but will attempt to run programs that have the "required 68020 processor" flag set.

Of course, routines that directly access "I/O Ports" will generally not work, as this is different hardware.

Some system and job information in AMOS memory is either not valid or has different meanings. Most of this is directly related to the internal operation of AMOS 8.x, such as the job run queue. Generally, this is only an issue if you are using custom assembler code and not using pre-existing monitor calls to access the information.

All current AlphaBASIC versions are fully supported with their existing .RUN or .RP files. There is NO advantage to re-compiling. An AMOS 8.x system will generate the same code as on an older AMOS system. The run files can be moved to any system.

As AMOS 8.x assembler libraries have been updated during the Eagle-760 development, not all re-assembled programs will have the same hashes. However, they should still work the same even on older AMOS systems.

SSD access via AlphaBASIC still works as before.

Configuration and Maintenance: *It will be hard to tell the difference!*

All normal system configuration files are exactly the same structure as on previous AMOS systems. With new hardware, as always, there are new disk and interface drivers. A lot of older, hardware related programs have been removed from the AMOS 8.x release. Their behavior under AMOS 8.x is unknown and unsupported.

The booting defaults are AMPC.MON and AMPC.INI, so you can keep your old INI files.

All additional AMPC specific configuration and maintenance is done from the "System Diagnostic" screen, on the system console.

The (**A**lpha**M**icro**D**isk) **AMD** files are 100% compatible between Eagle 760, 800's, 900's & AM8000, AM9000 systems. However, AMPC 5.0 and AMPC 6.0 Dynamic disks are not readable under AMPC 7.1 software. If you are doing an upgrade from one of these system types, generate a Fixed Disk **AMD** file under AMPC 5.0 or AMPC 6.0 and move the data from the Dynamic Disk to the Fixed Disk **AMD** file. Then you can read the customer data and programs from AMPC 7.1 from the Fixed Disk **AMD** file.

What Is Hidden?

Actually, there are a number of "hidden" areas that should only be accessed by VARs and system administrators or qualified service technician:

- The <AMPC 7.1 System Diagnostic> screen, accessed by using ALT + TAB on the system console.
- "Windows 7" operating system. Accessed through <System Diagnostic> screen or from the Desktop of Windows.

- The Eagle 760 motherboard BIOS, accessed by pressing DEL during the POST.
- The Adaptec SCSI Bios Setup, accessed by typing Ctrl + A on system console during SCSI device scan.

ABOUT THIS MANUAL

The purpose of this document is to provide you with information on how to operate the Eagle 760 systems. After you've followed the instructions in this book, the AMOS 8.x Servers will be set up and running. You will have a good idea of where to go next for information on the software to use on these Servers. A lot of time went into writing this manual due to the fact that AMOS 8.x is slightly different than traditional AMOS computers. Many of the chapters may look like previous manuals, but in reality, every section has been rewritten with AMOS 8.x in mind.

- This chapter contains a software and hardware overview of these systems. It also discusses the configurations available, as well as warranty and service information.
- Chapter 2 has unpacking and Installation information for the Server. It also contains information on choosing an installation site.
- Chapter 3 discusses the AMPC 7.1 Configuration program and its options.
- Chapter 4 is the AMOS overview.
- Chapter 5 highlights AMOS software application packages that are available for the Server. To learn more about each subject, we provide a list of Alpha Micro documentation that can be ordered.
- Chapter 6, System Administration, mainly explains the AMPC.INI file changes and Windows administration details and Acronis procedures.
- Chapter 7 gives Hints Restrictions and Shortcuts. The minimum system configuration guidelines and general information on the use of the Servers is presented. Some useful utility short cuts are also described.
- Chapter 8 contains information on Preventive Maintenance for the Server.
- Chapter 9 contains the diagnostic display codes which are active under AMOS 8.x
- Chapter 10 contains information on TODOS and FMDOS software.
- Several appendices contain technical information, including SCSI bus configuration details and instructions for serial cabling and installation. The AMOS INI examples are documented.

The *Eagle 760 Service Manuals* contain additional information on opening and configuring the Server. The service manuals are intended for authorized technical personnel only.

Graphics Conventions and Definitions

Like other documents in the Alpha Micro documentation library, this manual contains a number of standard symbols to make our text easier to read and understand.

Symbol	Meaning
TEXT or(**text**)	Bold text in an example of user/computer communication represents the characters you type. When the text is all capitals, type exactly what's shown.

Symbol	Meaning
TEXT	We use text in this typeface for: characters the Server displays on the screen, program examples, and command format. When showing command format, all capitals indicates a constant part of the command line, such as the command name, while lower case indicates variable information, such as a file name.
Text	Text in this bold, italic typeface is a reference to part of a previous command format description or sample.
	This says "Halt!" and lets you know an important warning or message is being presented that could cause serious damage or inconvenience if ignored.
	This "Hint" symbol indicates a helpful bit of information, or a "short cut" that could save you time or trouble.
	This "Remember" symbol indicates something you should keep in mind while following sets of instructions.
ENTER or RETURN	These key symbols refer to the enter key on the keyboard. The name of the key appears inside the key symbol.

Text Conventions and Definitions

AMD	**A**lpha**M**icro**D**isk is a pseudo disk drive
Windows	Windows 7 Professional® or Windows 7 Home operating system
XPE	Windows XP-Embedded operating system
Select> [Tools]	With the mouse *select* the program option [Tools] and left *click*.
(**ESC**)	Type the enclosed key, in this case the ESC key.
<Device Manager>	Windows application program or a window title enclosed in < > braces
{Ports}	{Ports} is a program option under the Device Manager example above
{Menu item}	{Menu item} is a title of one item in a menu or application screen

SERVICE INFORMATION

The following sections give support information for the Alpha Micro Eagle 760 Server Systems.

Post-Sales Support

Alpha Micro provides a comprehensive post-sales support program for its entire product line. Our Technical Support organization is structured to provide the Alpha Micro dealer with fast access to support assistance and information.

Our customer commitment is maintained through the expertise and skills of our competent, professional staff whose dedication assures all Alpha Micro customers the maximum benefits of quality support. Alpha Micro warrants its products through our VAR network. Alpha Micro will repair or replace a defective product under warranty without cost to the purchaser. Should you wish to arrange for factory warranty service for your equipment, you should obtain a Return Authorization Number from the Alpha Micro Order Administration.

For Further Assistance

If you are unable to contact your dealer, Alpha Micro will be glad to refer you to another one. If you relocate and want to learn the name and address of an Alpha Micro dealer near you, please call Alpha Micro at 800-Buy-Alpha (800-289-2574) or write us at the address inside the front cover.

For national field service at your location contact our authorized service provider Birmingham Data Systems at 800-968-0860 (East Coast) or 800-461-8410 (West Coast).

Chapter 2 - Installation

This chapter gives general installation information for the Eagle 760 Servers. It discusses the following topics:

- Unpacking the Server
- Instructions for re-shipping the Server
- Preparing a site for the Server
- Verifying AC power requirements
- Installing the operator console, mouse, and keyboard
- Turning on the Server
- Initially testing the Server
- Booting AMOS 8.x
- Installing Alpha Micro software
- Turning off the Server
- Expanding hardware capabilities

Your Alpha Micro VAR can assist you with setting up, expanding and servicing your Server.

UNPACKING GUIDELINES

Unpack the Server and ***save all packing material and cartons*** in case the Server ever needs be to transport again. The shipping material was carefully designed to provide optimum cushioning and protection. When re-shipping or otherwise transporting the Server, the original packaging must be used to ensure safe shipment.

When moving the Server, handle it gently. The hard disk in the main unit has moving parts and delicate read/write heads. Rough handling could damage the drive and prevent the Server from operating properly.

If your Server included a monitor, unpack it now and set it aside. The monitor will serve as the operator console. Also set aside the mouse and keyboard that came with the system.

Reporting Shipping Damage

If there is any damage to the shipping container or the main enclosure, or there are missing items from the packing list, please call your VAR immediately. Shipping damage must be reported to the shipping company immediately! Do not power up the system if the Server is **severely damaged**.

Instructions for Reshipping the Server

If shipping damage has occurred or the self-test indicates a problem with the Server, your VAR may recommend that you ship it back.

If for some reason you cannot contact your VAR, please call the Alpha Micro Sales Department. They will give you the name and address of an Alpha Micro VAR near you who can help. See "Service Information" in Chapter 1.

When reshipping or otherwise transporting the Server, you must use the original packaging to ensure safe shipment.

Please include a note to the person who will receive the system containing the following information: your name, address, phone number, the date you shipped the system back, and the reason for return. Please insure the shipment to cover any damages.

Be as specific as possible about the problem experienced—the more information provided, the easier it will be for the service technician to determine the reasons for any problems. If any troubleshooting procedures were done, let the person receiving the system know exactly what procedures were done and what the results were.

What's Included and What Else You Will Need

Unpack the Server and peripherals and identify the following items:

- The software license and warranty cards
  - Documentation and System Manuals are now on-line located in C:\AMPC\DOC folder.
  - The main enclosure and AC power cord
  - LCD Monitor and AC power cord (optional)
  - Mouse and keyboard
  - AMOS 8.x Bootable Backup DVD or Windows software CD

In addition to the equipment Alpha Micro has provided and the operator console, the following items are needed:

1. Properly configured cables for connecting additional peripherals, such as terminals, modems and printers to the computer.
2. The manufacturer's operator manuals for any terminals and printers.
3. Ethernet Network Hub or Switch and Ethernet cabling for network connections.
4. If the Server is set for 230 Volt AC, you need a 230 Volt AC power cord with the correct plug for your geographical area. Your local VAR may already have included this power cord with the Server; if not, contact the VAR for information on where to get it.

OVERVIEW OF INSTALLATION PROCEDURES

Installing the Server is a matter of:

1. Choosing and preparing a location for the system that is clean of dirt and dust, and a ventilated environment to cool the system. Please provide at least 6 to 8 inches behind the system and at least 8 inches in front. The space used must not be confined like a cabinet or bookshelf where no cooling air can enter or exit the system enclosure.
2. Making sure the power supply is configured correctly for the local electrical requirements.
3. Connecting the operator console, mouse and keyboard.
4. Running the initial POST diagnostic test to make sure the system is working correctly.
5. Creating a backup tape or backup DVD.
6. Connecting additional terminals and printers.
7. Getting assistance.

Some of the sections in this chapter refer to various locations on the front and back panels of the system. The next two sections describe the front and rear panel connectors, controls, and indicators.

Eagle 760 Server Rear I/O Panel

The types and number of connectors on the rear panel of the Eagle 760 Server will vary depending on the equipment included with the order.

AC Voltage Selector

AC Power input

Master ON/OFF switch

Keyboard, Mouse connectors

COM 1

Parallel Port

VGA

USB Port 1 & 2

USB Port 3 & 4

Ethernet Port

Figure 2-1: Eagle 760 Rear panel

PREPARING THE SITE

For the Server to do its best job, it must be placed it in a clean environment, and one that meets the temperature specifications of the Server. Extreme temperature or humidity can cause computer failure. But it is not very demanding -- its environmental needs are similar to your own.

Physical Requirements

The first step is to make sure the location for the Server is large enough and sturdy enough to support it. Leave enough room for any local terminals and printers that are needed. Do not place the system in a hallway or other high traffic area. The dirt and dust from these areas end up inside the computer chassis.

Make sure the AC power cord will reach from the back panel to an electrical outlet, and that there are enough electrical outlets for all terminals and printers. Make sure the terminal cabling will reach from the back panel of the Server to the terminals and printers. See the following section on "Power and Cable Connections" for more tips and suggestions.

Environmental Requirements

It is important to remember that the cleaner the environment, the more efficiently the Server performs. Treat the Server with respect. For example, do not place coffee cups or soda cans on top of the main enclosure where they can spill? If spilled liquid happens to reach the circuit boards inside the computer, it could cause a failure.

In general, install the Server in an area where people do not eat, drink, or smoke, since all of these activities can cause contamination problems. Try not to place the Server in a high traffic area. This typically creates more dirt and dust, which can clog the air intakes of the Server chassis. This will cause cooling problems because of the dirt accumulation. A side effect of a high traffic area is static electrical discharge, which can cause system resets. This can be avoided by installing the Server in a better environment. For information on cleaning the Server and taking care of its components, refer to Chapter 8, "Preventive Maintenance."

The selected location for the Server must be within certain temperature and humidity ranges. Air circulation around the system is something that should be considered. Do not put a computer in a closed closet where there is no cooling. See the separate specification sheet for detailed requirements.

It is very important for the health of the Server that its cooling system is not obstructed. The Server takes air in from the front and exhausts air at the rear. Allow **at least** six to eight inches at the rear of the unit for ventilation.

Environmental Specifications

Server external operating temperature: 60 to 90 degrees F (16 to 32.2 degrees C)
10 degrees C per hour maximum fluctuation
Humidity: 20% to 80% (non-condensing)

Static Electricity and Grounding

One of the greatest enemies of computers, terminals, and printers is static electricity. The chief villain is climate: dry winds and dry seasons. On dry and windy days when humidity is low, static electricity could affect the Server. Be aware that both carpets and the plastic mats often used under desks are a prime source of static electricity.

If possible, install the Server in an uncarpeted area. If the Server is placed in a carpeted area where static electricity could be a problem, treat the area with anti-static spray on a regular basis.

If problems occur when equipment near the Server is turned on—for example, if the Server stops functioning when someone uses the photocopier, improper grounding could be the problem. We recommend a low impedance power conditioner be used to filter out these power problems. Alpha Micro

offers a variety of appropriate approved power conditioners or UPS systems. Ask your VAR for further details.

Several anti-static sprays on the market can be of considerable help during days when static electricity is a problem. Also, using an air conditioner that controls humidity can greatly reduce a static electricity problem.

Power and Cable Connections

Before selecting a site for the Server, verify the site has adequately regulated AC power. If you request it, many power companies will install test equipment to determine if there is a need for additional line regulation. Test the line voltage using a high-speed line transient recorder. If, over several days of testing, the line voltage varies more than 10 percent from the rated line voltage, a power conditioner or UPS system may need to be installed and a new dedicated AC power circuit. Alpha Micro Servers require a properly grounded power outlet for the system to run correctly.

A "transient free," or smooth and consistent power source and a properly installed earth ground can significantly improve the reliability of the system. While the Server is in use, it is important to maintain a constant line voltage free of power surges, fluctuations, and impulses. Ideally, a separate power circuit should be available for use only by the Server and the subsystems connected to it. However, if this is not possible, a line conditioner capable of suppressing transients or spikes to eliminate power surges and noise will be required.

Make sure the power rating for the power outlet is large enough to power the Server and any future subsystems to be installed. In North America, a standard 15 Amp, 115 Volt grounded connector-type outlet is required for the CPU chassis. In some other countries, the requirement is a 230 Volt AC power source.

The maximum power requirements for the Servers are:

- 115 Volt AC at 5 Amps,
- 230 Volt AC at 2.5 Amps

Additional outlets are required for each I/O chassis and/or peripheral connected to the Server. Alpha Micro Servers come with a standard six-foot power cord. If this is not long enough, be sure any extension cords used are rated for the full 15 Amps—otherwise, the full voltage will not reach the Server. This can affect the efficient operation of the Server. A point to remember is that the closer the voltage gets to either end of the AC power range, the less efficient the Server will be.

To avoid electrical interference, sources of electrical noise such as air conditioners, copiers, electric typewriters, or cleaning equipment should not be connected to the same power circuit as the Server. All outlets providing power to the Server should have a common grounding point restricted to only those connections coming from the computer installation.

Data cables should not be located near high voltage power lines, power transformer telephone cables, or in elevator shafts. They should not cross walkways. If cables must cross walkways, cover the cables with a cable bridge.

Please consider how long the serial communication cables will be. Single-ended serial circuits are susceptible to all forms of electromagnetic interference. As line length increases beyond fifty feet, the

reliability of the RS-232C cable connected to the terminal and printer decreases rapidly. If local terminals are to be located further than fifty feet from the computer, we recommend you use low capacitance twisted-paired overall shielded cables. If this cable does not solve the problem, then use a Terminal Server to extend the reach of serial devices. See Appendix A for more information.

Verifying Voltage Compatibility

Different parts of the world use different standards for electricity. Most areas of the United States use 115-Volt electricity. Many other areas of the world use (220 to 240) Volt electricity.

Power Supply AC Voltage and Receptacle

- The Eagle 760 requires that the Voltage selector switch be set for 115 or 240 VAC for the site. See Figure 2-1.

INSTALLING THE OPERATOR CONSOLE, MOUSE AND KEYBOARD

The video display that is used when installing software and running diagnostic programs is called the Operator Console. There are two basic things you must do to install the Operator Console:

- Verify that the AC voltage for the location is compatible with the console specifications and plug the console AC power cord into the AC voltage source.
- Connect the console video cable to the 15-pin VGA output connector on the back panel of the Server.

Install the mouse and keyboard connectors to their respective connectors on the back panel of the Server. See Figure 2-2 & 2-4 for details.

TURNING THE SERVER ON

Once the Server is turned on, be very careful never to move the Server while power is on; doing so could damage the disk drives inside the unit. "Turning the Server Off," at the end of this chapter, will describe how to power down the Server correctly before moving it.

For Eagle 760 Servers equipped with a SCSI controller, these systems do not need a back panel mounted terminator. The sub-system that is connected to the controller must have the terminator. If an internally mounted streamer tape drive is present, the internal SCSI cable must be terminated at the end of the cable either by enabling terminators on the last internal SCSI peripheral or by a separate terminator installed in a cable connector at the end of the SCSI cable.

1. Verify once again that the Server has been configured correctly for the AC power service in your region.
2. Insert the socket end of the AC power cord firmly over the three prongs in the power cord receptacle in the back panel. Then plug the pronged end of the cord into an electrical outlet.
3. Turn on the Server by switching the AC power ON / OFF switch on the rear panel to the ON position. Then push the power button located on the front panel.

4. To verify that the power is on:
   - Are the Power and Run or Disk activity indicator lights on the front panel lit? (See Figure 2-1)
   - Are the cooling fans running? To check the fans, place your hand behind each fan opening in the back panel; you should feel air blowing out.

If the power light and the fans are not on, you have a problem. Call your VAR for troubleshooting help.

BOOTING UP WITH AMOS 8.X

All Eagle 760 Systems have AMPC 7.1 and AMOS 8.2 system software installed by Alpha Microsystems before the Server leaves the factory. This includes Windows 7 software and motherboard drivers. Since this is the case, all you need to do is turn on the Server.

The first thing displayed on the Console is the power on self-test (POST) diagnostic. Once this process is completed, the system software on the hard disk or RAID subsystem will start to load. In a few seconds the Windows logo will display. If the user wishes to automatically boot up into AMOS they must place a copy of the Boot AMPC shortcut into the "Default User Programs Startup folder". The AMPC System Diagnostic window will appear and will execute the AMPC.MON and AMPC.INI as the default settings. Then a terminal emulator will execute and display the system initialization command file. These commands appear in rapid succession on the operator console VTM1 port as they are executed. VTM stands for Virtual Terminal using AMPCLite, AMPCTerm terminal emulators.

If nothing appears on the Operator Console after a couple of minutes, contact your Alpha Micro VAR. You may need to follow the instructions below to install the operating system onto the System Disk. More than likely you will need to inspect the system for a disconnected power connector, disconnected SCSI cable, or no Video cable installed from the system. Do these checks before attempting to install any software. If a DVD-R media is in the DVD drive tray, it may take a little longer to go through the boot process since it tries to read the DVD media first to boot from it.

INSTALLING AMPC SYSTEM SOFTWARE

If the AMOS software is not already installed on the hard disk, the system software is provided on an AMPC Install DVD. The Server should have been delivered with the software DVD. If no DVD was included, contact your VAR for help.

To install the system software, press the eject button on the DVD drive and place the AMPC Install DVD into the drive tray with the printed side UP and close the tray. Use Windows Explorer to browse the DVD and find the SetupAMPC.Exe program. Double click on this file and follow the on screen buttons to install AMPC 7.1 Software.

When the software load finishes, eject the install DVD, and the Server will display the AMPC Program Group. Find the Configure AMPC shortcut and execute it and go thru the configuration tabs and set up the system. Please reference Chapter 3 for details. Press the [OK] button, then select File>Exit, this will write the new settings to the Windows Registry.

Expanding the Eagle 760 Server

Your Alpha Micro VAR can assist with setting up, expanding, or servicing the AMOS Server. Once the Server is configured with the basic components, additional subsystems may need to be installed. Expanding the Server is easy. Changes to the basic configuration to add more users, printers, and serial devices or change memory allocations are accomplished in two steps.

Step one for adding new hardware involves changing the AMPC 7.1 Configuration. Step two is to make the changes to the System Initialization Command File to define the new hardware. Changing the allocation of system resources also requires changing the system initialization file. For information on modifying this file, refer to the *System Operator's Guide to the System Initialization Command File*.

Please read that document carefully. Modifying the system initialization command file without understanding its elements is dangerous. A serious mistake could damage the file and leave the Server unable to boot from the defined System Disk. Instead of modifying the file directly, alter and test a copy, then replace the original file with the validated copy. Please refer to the sample INIs in the last Appendix of this manual for AMOS 8.x specific information that is not contained in the older documentation.

TURNING THE SERVER OFF

Turn off the Server whenever:

- You add to or modify the system hardware configuration
- You move the Server for required servicing
- Add or remove external SCSI devices

To turn off the Server always follow these steps:

1. Make sure all users have exited all programs and are logged off the system
2. Remove any backup media (such as CDs and tapes or USB drives) from the Server
3. From the <AMPC 7.1 Diagnostic> screen, *Select*> {File} >{**Shutdown**}.
4. Or, use the xAdmin utility {ShutDn} from any terminal. This utility will power off the Server. Read the on-line help files on the system.
5. If the system will not power down after a few minutes using the above procedures, you should first try pressing and holding the AC power button on the front panel for about ten seconds until it powers off. If the server still will not power off, turn the rocker switch on the rear panel to the OFF position.
6. Data corruption may occur if any data has not been flushed to disk when the server is powered off using the hardware switches.
7. Once the system is off, turn the rocker switch on the rear panel off, if the inside of the chassis will be serviced

GETTING ASSISTANCE

If you have followed all of the instructions in this chapter but the Server is not working, you probably want help. Call your VAR or the Alpha Micro Technical Assistance Center at 800-487-7877.

Chapter 3 - AMPC 7.1 Configuration Program

This chapter contains two types of information: basic concepts about the way the AMPC 7.1 is set up and operates, and general procedures for the configuration of the Eagle 760 environment. We will cover the following:

- Booting the Eagle 760 Server
- Configuration Program
- Creating your own System Disk

For the next chapters, below is an additional text description for programs and actions needed by the user.

<Screen or box Title or Application Program top line >
<Selected item> *action for you to do* **(keyboard input) (keyboard key)**
or <Selected item> mouse *Select*> **{menu item}**
<Menu> *action key press* keyboard
or **<Menu>** ***Select***> [menu item] [scroll box] with mouse left click
[Radio Button] mouse *Select* or ENTER
{Action notes and choices}

Select> [program option] or *Select*> <Title> menu1> menu2> menu3> [program option]

To select the last "program option", you need to make multiple left button selects with the mouse of each menu number to reach the correct program selection.

BOOTING THE EAGLE 760 SERVER

Booting is the process the system goes through whenever the power is turned on or the reset button is pressed. The main CPU board goes through a POST, the SCSI devices are scanned, and the CMOS settings are displayed. The CPU reads from the CMOS to find the selected order of the boot devices. Then the CPU loads from the first listed hard drive the operating system into "RAM," and executes its instructions.

The first program set loaded into memory is Windows 7 software and drivers. The Windows 7 software also loads configuration information about the specific hardware and other software drivers allowing AMOS to access these resources. Once loaded, if you place the Boot AMPC shortcut into *C:\Documents and Settings\All Users\Start Menu\Programs\Startup* then the Boot shortcut takes over and executes the AMPC.EXE program, which controls the AMOS 8.x operating system. If there is a problem with the system configuration, you can fix it from the Windows software environment or execute the AMPC Configuration program shortcut in the C: AMPC folder. Once in the Windows environment, you may update the AMPC software or move, copy or create AMOS disk files to the correct locations. Sometimes a Hard disk or RAID subsystem will be added. These devices must be initialized from the Windows environment first. This process is accomplished with Windows from the <Control panel> Administrative

Tools> Computer Management> Storage> [Disk Management] menu. If you are familiar with Windows, this is very easy to understand.

The files that are transferred into system memory when initializing AMPC.Exe are the Ethernet library, the SCSI library, and the embedded AMOS files. The SCSI library will scan all SCSI busses to detect any SCSI devices. Then AMPC.MON is loaded and executes the AMPC.INI.

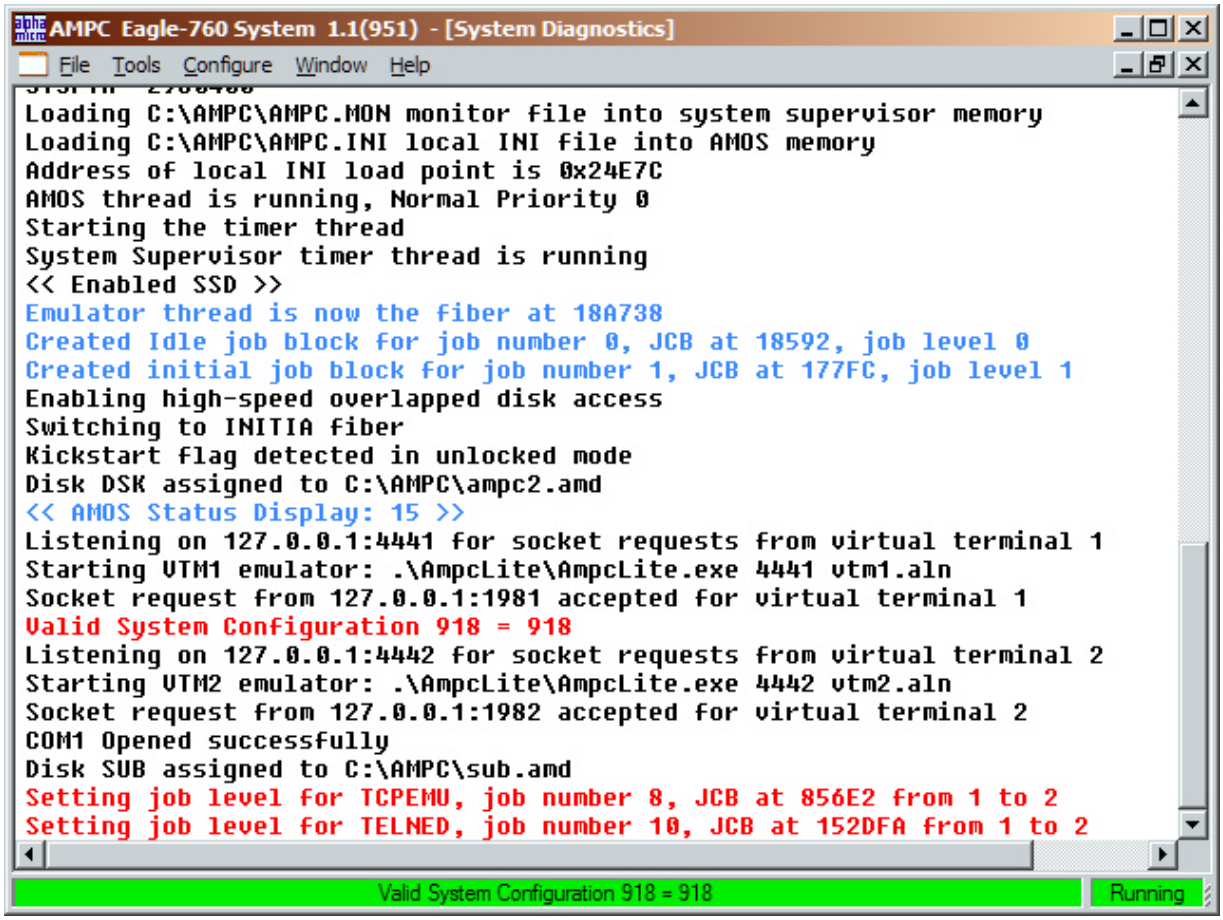

AMPC Eagle-760 System 1.1(951) - [System Diagnostics]
File Tools Configure Window Help
Loading C:\AMPC\AMPC.MON monitor file into system supervisor memory
Loading C:\AMPC\AMPC.INI local INI file into AMOS memory
Address of local INI load point is 0x24E7C
AMOS thread is running, Normal Priority 0
Starting the timer thread
System Supervisor timer thread is running
<< Enabled SSD >>
Emulator thread is now the fiber at 18A738
Created Idle job block for job number 0, JCB at 18592, job level 0
Created initial job block for job number 1, JCB at 177FC, job level 1
Enabling high-speed overlapped disk access
Switching to INITIA fiber
Kickstart flag detected in unlocked mode
Disk DSK assigned to C:\AMPC\ampc2.amd
<< AMOS Status Display: 15 >>
Listening on 127.0.0.1:4441 for socket requests from virtual terminal 1
Starting VTM1 emulator: .\AmpcLite\AmpcLite.exe 4441 vtm1.aln
Socket request from 127.0.0.1:1981 accepted for virtual terminal 1
Valid System Configuration 918 = 918
Listening on 127.0.0.1:4442 for socket requests from virtual terminal 2
Starting VTM2 emulator: .\AmpcLite\AmpcLite.exe 4442 vtm2.aln
Socket request from 127.0.0.1:1982 accepted for virtual terminal 2
COM1 Opened successfully
Disk SUB assigned to C:\AMPC\sub.amd
Setting job level for TCPEMU, job number 8, JCB at 856E2 from 1 to 2
Setting job level for TELNED, job number 10, JCB at 152DFA from 1 to 2
Valid System Configuration 918 = 918
Running

Figure 3-1: AMPC 7.1 System Diagnostic window

The Server is initialized with a special file containing commands that define to the AMOS operating system all hardware and software programs needed from the booted environment.

As the Server boots, it reads the AMPC.INI file and "builds" the operating system in memory. Changes to the AMPC.INI file are needed whenever hardware is added, like drives, tapes, terminals, printers, or new programs are added into system memory.

The Server processes the commands in the system initialization file. Each line executed is displayed on the operator console. When all of the commands in the initialization file have been processed successfully, the Server is up and running. The last command in any system initialization file is "MEMORY 0".

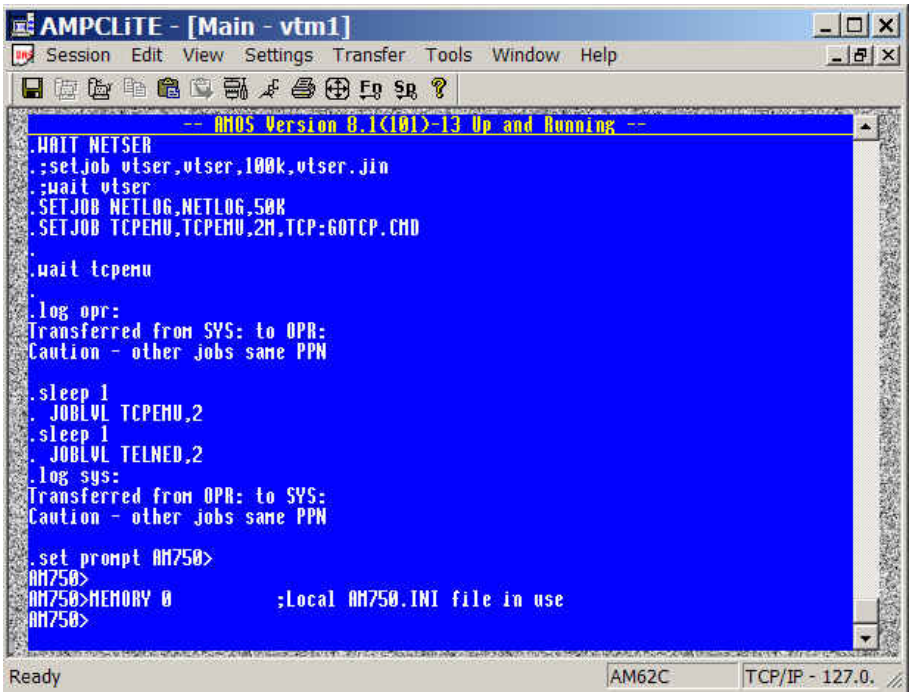


Figure 3-2: Sample Boot Session

Switching Between AMOS and Windows 7

Once in AMOS and operating from VTM1, you can switch between AMOS and Windows with just a keystroke on the console keyboard. The standard method is ALT/TAB, to activate the System Diagnostics window.

CONFIGURING EAGLE 760 SERVERS

On the task bar there are 5 command options. The third one is Configure. With the mouse, select and click on *Configure*. This will launch the AMPC Configuration Window. We will step through each program option tab in the remainder of this section to initially configure the AMPC Environment.

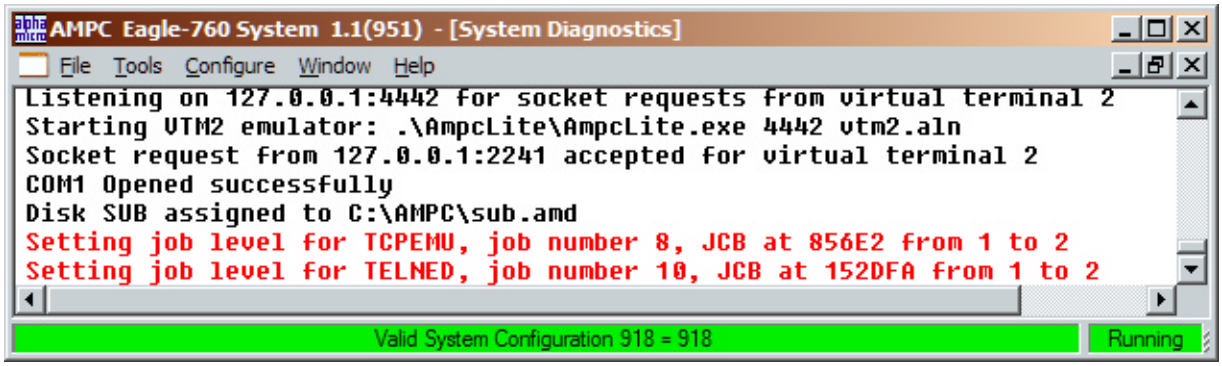

AMPC Eagle-760 System 1.1(951) - [System Diagnostics]
File Tools Configure Window Help
Listening on 127.0.0.1:4442 for socket requests from virtual terminal 2
Starting VTM2 emulator: .\AmpcLite\AmpcLite.exe 4442 vtm2.aln
Socket request from 127.0.0.1:2241 accepted for virtual terminal 2
COM1 Opened successfully
Disk SUB assigned to C:\AMPC\sub.amd
Setting job level for TCPEMU, job number 8, JCB at 856E2 from 1 to 2
Setting job level for TELNED, job number 10, JCB at 152DFA from 1 to 2
Valid System Configuration 918 = 918
Running

Figure 3-3: System Diagnostics

The General Tab

The first option check box (Figure 3-4) will leave the Diagnostic window displayed or will minimize the diagnostic window after the AMPC system boots up. Shutdown will ask for confirmation before proceeding with system shutdown if the next box is checked.

The use Metropolis terminal output for LBasic check box is checked only if your system uses Metropolis and Lightning Basic software.

In the next check box, fill in the amount of RAM you wish to allocate to AMOS, in 1 MB increments. Table 3-1 below lists the recommended AMOS memory sizes for the various types of Servers.

System Type	Recommended Maximum AMOS Memory Size*	Standard Total Server Memory
Eagle 760	64 MB	512 MB
Eagle 760	128MB	1024MB
Eagle 760	256MB	2048MB

* Absolute maximum AMOS memory size for any system is 850 MB, a restriction of the Windows 7 operating system

Table 3-1: Recommended AMOS Memory Sizes

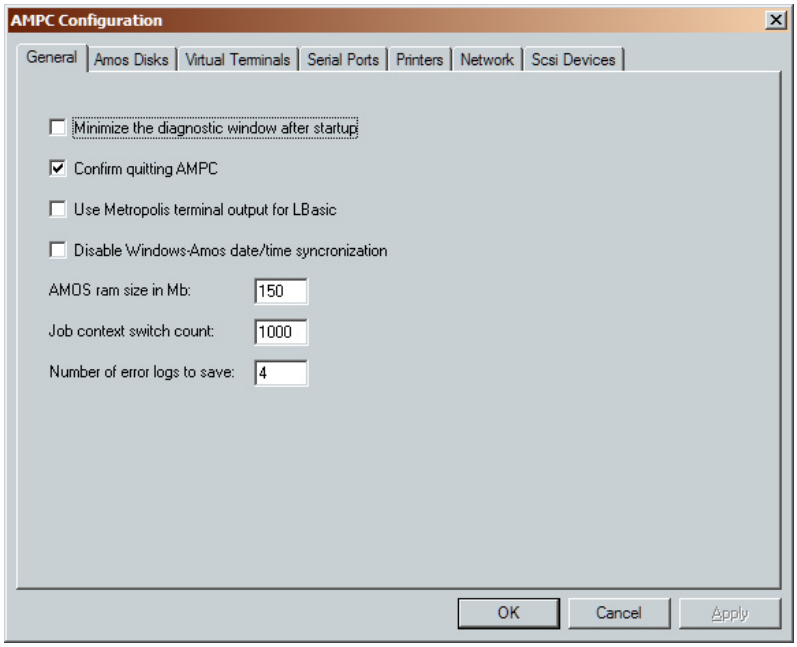


Figure 3-4: AMPC Configuration General Tab

AMPC creates Boot Diagnostic Logs, which record the boot process. If the system fails, a complete system memory dump is logged. The next input box allows the administrator to select how many of these logs are to be kept on the disk. If this setting is greater than 2, the oldest file is deleted before a new one is allocated on the hard drive. These files are allocated each time the system boots. These logs are located in the C:\AMPC\Error logs folder.

To save the settings configured, click on the [OK] button or [Cancel] to leave it alone. The save process only needs to be done once after inspecting all Configuration Tabs. To write the changes to the system registry, you are required to *Select*> File>[Exit] from the main diagnostic screen. Then *Select*> [Quit].

AMOS Disks Tab

Now click on the AMOS Disks tab. When EAGLE 760 is installed, the standard system disk "**DSK**" is AMPC.AMD, which has four logicals initially 32 MB each in size. Additional disk subsystems may be defined, as shown below. The alternate boot disk file provided is SUB.AMD.

Up to nine additional disk subsystems can be defined. Use the [Create] button to define your own disk files, or select the [Browse] button to use other existing disk files.

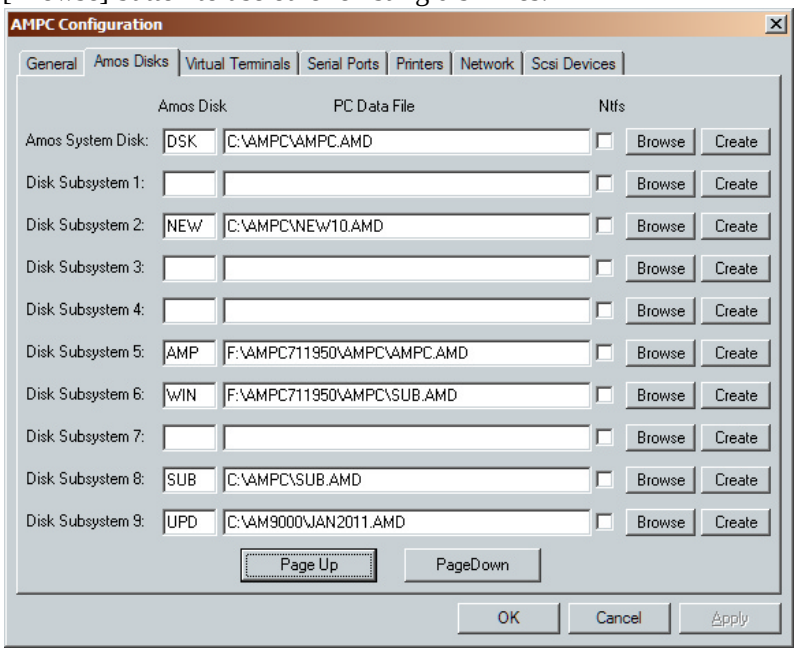


Figure 3-5: AMOS Disks

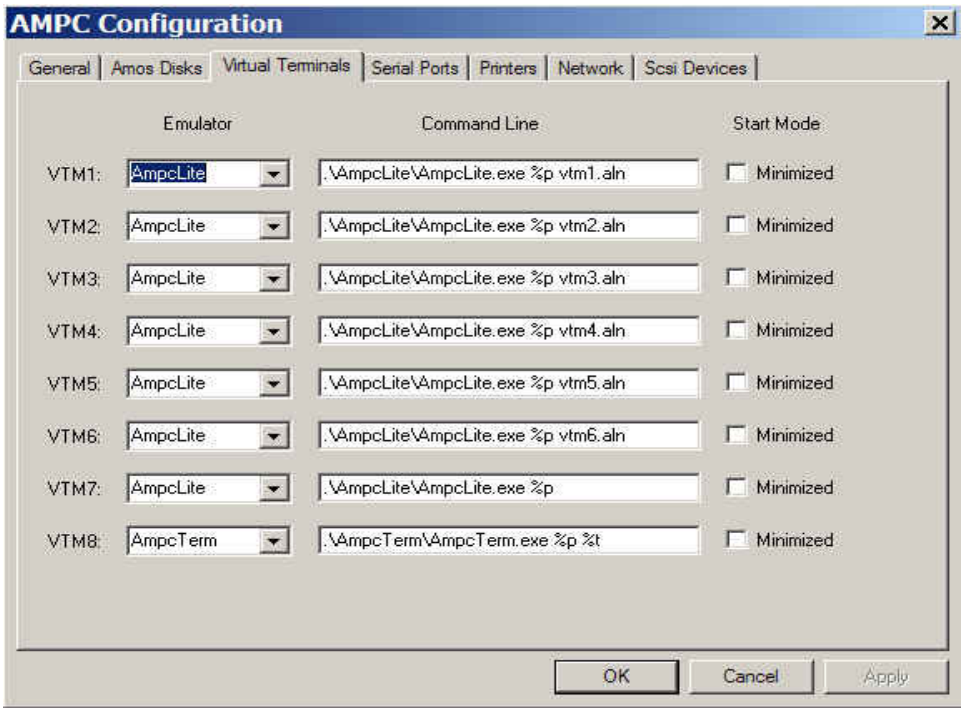
Using the Create button, you will define the number of logicals, the size of each logical drive in MB and the filename of the *.AMD disk. The location of the file is typed into the PC Data File input box. These files are stored on any Windows formatted hard drive connected to the system.

The 3-letter disk definition for the device must be the same in the DEVTBL, BITMAP, SYSTEM, and MOUNT statements in the AMPC.INI file. The disk driver to use for all definitions in this screen is **PCDSK.DVR**. Log to DVR: and COPY NEW.DVR= PCDSK.DVR in our example. Repeat this process for any other added disk device. In the above example, Drive C: is a RAID Level 1 drive with an NEW.AMD file created with 12 logicals and 2.56GB per logical. The released operating system was then copied into the NEW disk file to make it bootable. Later in this chapter we will detail the process for building new **AMD** disks.

Virtual Terminals Tab

Next, click on the Virtual Terminals tab. Eight virtual terminal windows can be defined, depending upon the AMOS user license. Up to three terminal emulators come with AMPC 7.1 software. With the mouse, select the Down Arrow under the Emulator column to bring up the emulators available. The Virtual terminals only run on the Console of the Eagle 760 Server. Please note: the system must boot from the VTM1 port.

Terminal emulators provided with the AMPC, are AMPCLiTE, a version of AlphaLAN Lite, or AMPCTerm, a version of the ZTERM terminal emulator. On-line help is available for both terminal emulators by selecting (Help) in the emulator task bar.



.

Figure 3-6: Virtual Terminals

The terminal emulators installed on the system are setup in the “INSTAL.CFG” file in the AMPC folder. This file is then accessed to select the Emulator for the VTMx channel as shown in Figure 3-6.

Note: Each virtual terminal consumes one AMOS user license if defined in the AMPC.INI. The definition here only reserves which emulator will be used for each VTM session.

Serial Ports Tab

To define the PC serial ports for use by AMOS, click on the Serial Ports tab. Under Windows, if a properly installed PC COM port is detected, the port will show up in the left panel as in Figure 3-7. A red X indicates the port was not detected on the Windows side and is not mapped for AMOS use. The detected ports must be mapped for use with AMOS by assigning them an AMOS COM port. With the mouse drag the selected PC serial port on the left to the AMOS serial port desired on the right. Please map them straight across for clarity.

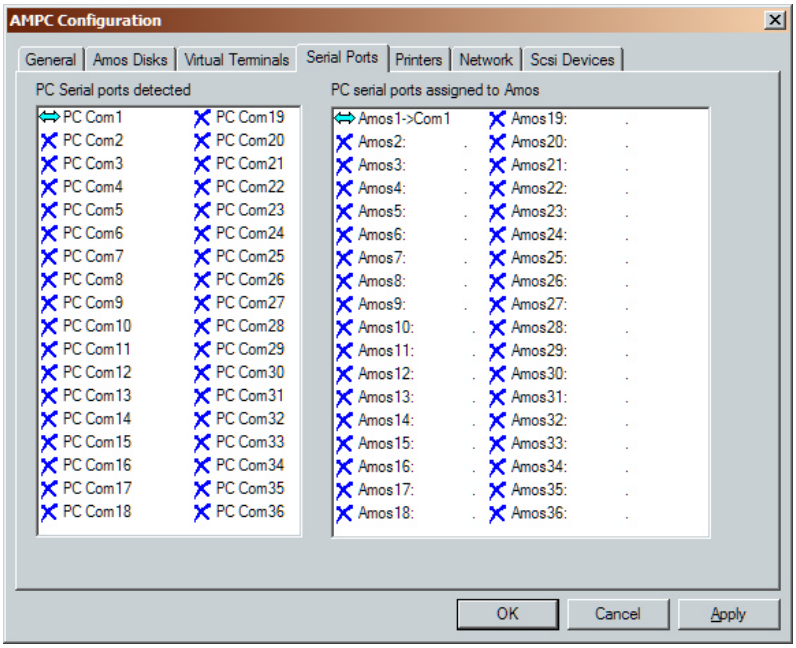


Figure 3-7: Serial Ports for a standard AMPC system

Note that when a PC serial port is mapped to an AMOS serial port, a yellow double-headed arrow replaces the green check or red X. To un-assign an AMOS serial port on the right, simply drag the double-headed arrow from the right to the left box and drop it.

When installing a new PC serial port, you must do this through the Windows <Device Manager>. To access the Device Manager program from the <AMPC Diagnostic > window, *Select*> Tools> [Control Panel], then *Select*> [System] and double click. The <System Properties> window will display. *Select*> [Hardware] tab. In the next screen *Select*> [Device Manager] button.

Each serial port counts against the AMOS user license if defined in the AMPC.INI. The mapping in this window is only to reserve the ports for AMOS use.

The <Device Manger> window will display the hardware devices in this system. See figure 3-8. Expand out the {Ports}{COM &LPT} entry by left clicking on the [+] box to the left of the menu item. If all the ports are properly installed the numbering will be *Sequential*, {1 to 36}. If not, the ports must be reassigned a sequential port number. First exit the <AMPC Configuration> program.

The reassignments are done by selecting the port and right click, *Select*> [Properties]. *Select*> [Port Setting] tab. *Select*> [Advanced] button. See chapter 6 for a detailed procedure.

The COM port number input box will be displayed in the <Advanced Setting for the Com Port>. Left click on the [Down arrow], and find the lowest number missing {usually 3} and select it. Now *Select*> [OK] button. Then *Select*> [OK] again.

Repeat this process for all COM ports that are not numbered sequentially. Once this is accomplished close the <Device Manager> window by *Select*> [X] in the upper right hand corner. Then close the <System Properties> window with an [OK].

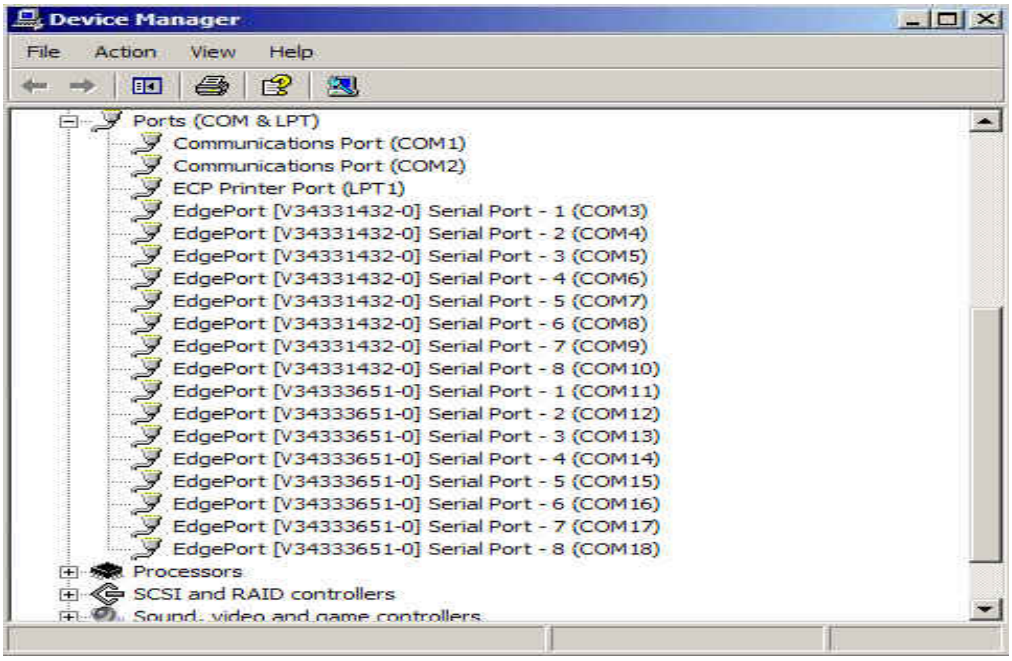

Device Manager
File Action View Help
Ports (COM & LPT)
Communications Port (COM1)
Communications Port (COM2)
ECP Printer Port (LPT1)
EdgePort [V34331432-0] Serial Port - 1 (COM3)
EdgePort [V34331432-0] Serial Port - 2 (COM4)
EdgePort [V34331432-0] Serial Port - 3 (COM5)
EdgePort [V34331432-0] Serial Port - 4 (COM6)
EdgePort [V34331432-0] Serial Port - 5 (COM7)
EdgePort [V34331432-0] Serial Port - 6 (COM8)
EdgePort [V34331432-0] Serial Port - 7 (COM9)
EdgePort [V34331432-0] Serial Port - 8 (COM10)
EdgePort [V34333651-0] Serial Port - 1 (COM11)
EdgePort [V34333651-0] Serial Port - 2 (COM12)
EdgePort [V34333651-0] Serial Port - 3 (COM13)
EdgePort [V34333651-0] Serial Port - 4 (COM14)
EdgePort [V34333651-0] Serial Port - 5 (COM15)
EdgePort [V34333651-0] Serial Port - 6 (COM16)
EdgePort [V34333651-0] Serial Port - 7 (COM17)
EdgePort [V34333651-0] Serial Port - 8 (COM18)
Processors
SCSI and RAID controllers

Figure 3-8: Device Manager – Ports assignment.

See Chapter 6 the section titled “PC Serial Port Installation and Renumbering Procedure” for the details on this process.

The Windows side must be done first before the AMPC program scans the hardware for ports available for use to AMOS. Restart the AMPC configure program. Once the ports are installed under Windows correctly, the COM ports on the left can be mapped to the corresponding AMOS COM port on the right with a select, drag and drop technique with the mouse

Printers Tab

Clicking on the Printers tab, sixteen printers can be defined to the AMOS system as shown. All printers must be installed as Windows printers prior to setting them up for use under AMOS.

The "LPT1", "LPT2", etc. parameters here have no relationship to the physical LPT ports on the host. These parameters provide logical references for AMOS 8.x. This assignment is in the AMPC.INI file as LPT1, LPT2, etc.

Graphics printing from AMOS requires a special setup to bypass the Windows graphic printer driver. This is ONLY supported for the LPTx ports when you check the “Raw Mode” Parameter. See Chapter 6 for more information on this setup.

Any printer seen by Windows, including USB and Network printers, can be defined as an AMOS “LPT” printer. None of these assignments count against the AMOS user license.

The Clear button can erase the LPTx assignment here and in the Registry.

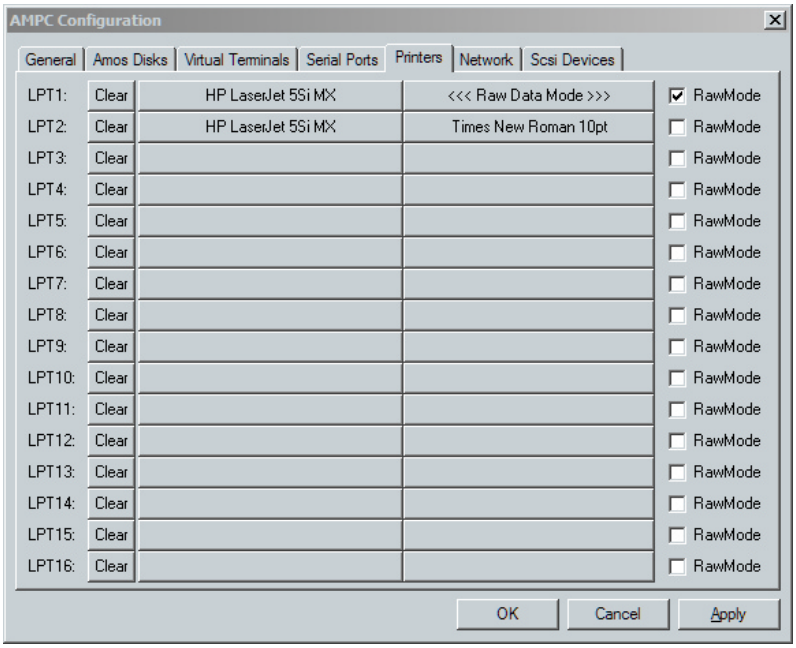


Figure 3-9: LPT Printer assignment

In Figure 3-9, the HP LaserJet 5SI printer is assigned to LPT1 in Raw Mode and the HP LaserJet 5SI is assigned to LPT2 with Times New Roman 10-point font.

Any Windows network printer that is added under the <Windows 7 Control Panel> {Printers and Faxes} application can be assigned to AMOS. To add a new printer, LPT3, click on the left box button and the Printer browse window will display. Use the down arrow button to find a local or network printer to assign. To select a Font, Click on the Right hand [box] and the Windows 7 printer properties page will be displayed. Use the scroll boxes to find the font and point size you wish to use.

Network Tab

When AMOS 8.x is installed, the communication network adapters present on the hardware should be identified in the Network menu, as shown in Figure 3-11. If more than one adapter is displayed on the screen, select the one you want to use with AMOS. A yellow double-headed arrow should indicate the selected network adapter.

Figure 3-10 illustrates how the Eagle 760 is shipped with the Ethernet port mapped for AMOS use. This high-speed port allows 10/100Mbps connections; depending on your network equipment, Please use the fastest routers and switches for connection to the Eagle 760 Server.

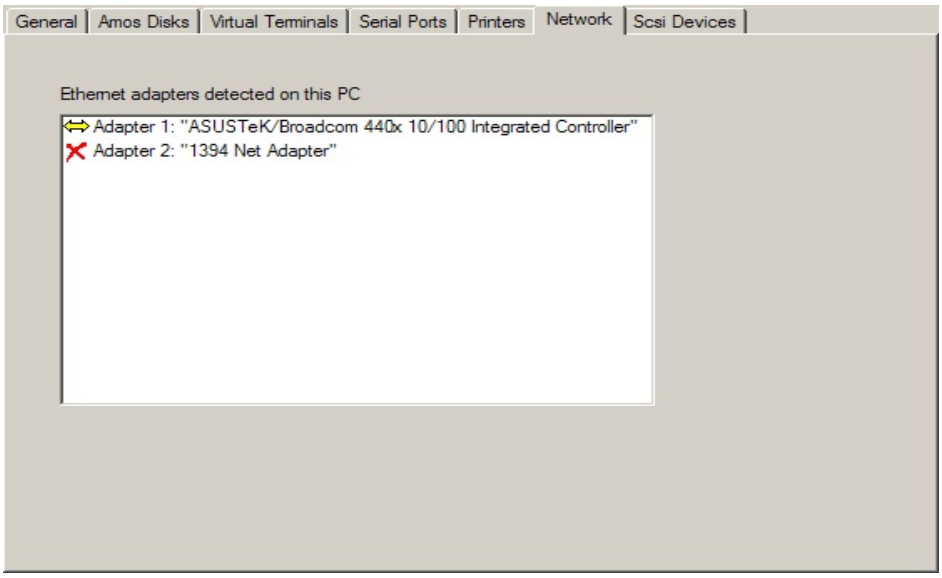


Figure 3-10: Network Tab for AMPC System

Do not disable any Ethernet port in the Windows <Device Manager>. All network adapters must be displayed in the hardware configuration. Only one network adapter needs to be mapped for AMOS use. Only the actively mapped network adapter should have a physical cable connecting it to an Ethernet switch. The maximum number of Ethernet adapters must not be greater than two.

SCSI Devices Tab

On an AMOS Server, all installed SCSI and ATAPI compatible devices present on the host should be identified in the upper portion of the SCSI Devices screen, as shown in Figure 3-11. The detected devices can be mapped to an AMOS SCSI device, numbers 0 through 6, by dragging the selected device to the AMOS SCSI device number desired. Tape drives are normally mapped as AMOS device 6 and the DVD device is mapped as Device 5. This leaves the other 5 IDs open for AMOS formatted disk drives, which can be attached to the system for data transfer. Normally moving the data from the AMOS formatted drive to an **AMD** disk file is preferred. The AMOS formatted drives are not known to Windows and cannot take advantage of Windows disk caching software.

If you are using AMOS formatted disk drives, it is recommended that you to enable AMOS disk caching for these devices. AMOS 8.x has provided a program to turn off **AMD** drives from being AMOS cached. This is activated by “SET NOCACHE dev:” for the **AMD** disk device in the System Initialization Command File. With this scheme you get the maximum performance from both disk device types. Older RAID systems and disks are plug and play with AMOS 8.x through this method.

The **AMD** disk file always has faster access than the AMOS formatted drive because all access to the AMOS formatted drive is done through a SCSI library, which adds an additional software layer. Once data is moved from the older drive format to an **AMD** disk, the SCSI drive can be unmapped and removed from the system configuration.

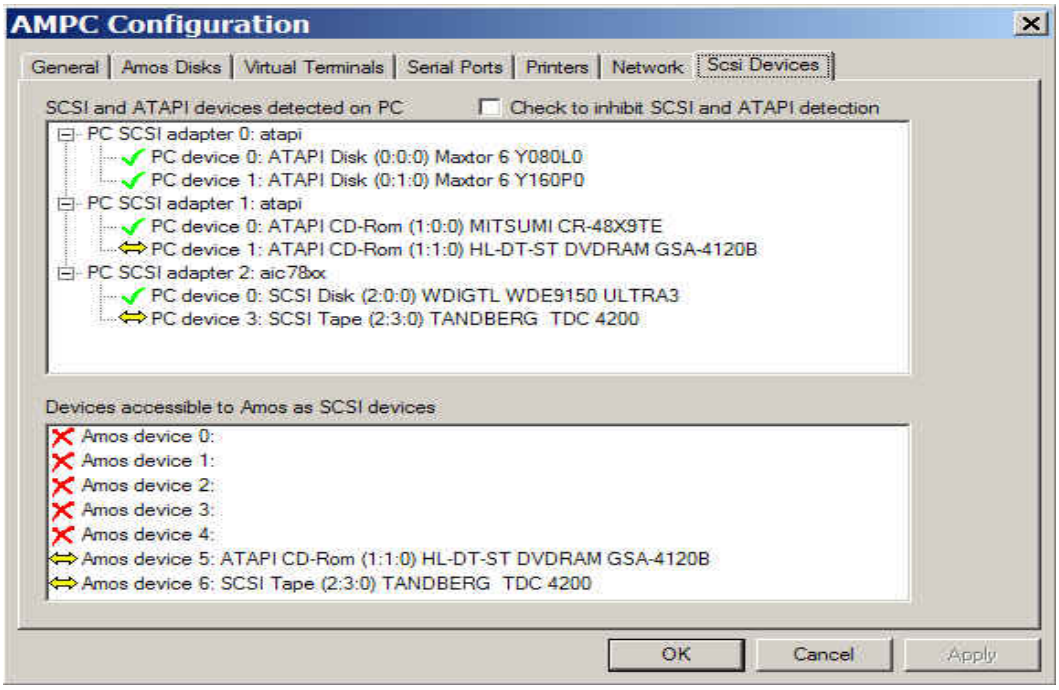

AMPC Configuration
General
Amos Disks
Virtual Terminals
Serial Ports
Printers
Network
Scsi Devices
SCSI and ATAPI devices detected on PC
Check to inhibit SCSI and ATAPI detection
PC SCSI adapter 0: atapi
PC device 0: ATAPI Disk (0:0:0) Maxtor 6 Y080L0
PC device 1: ATAPI Disk (0:1:0) Maxtor 6 Y160P0
PC SCSI adapter 1: atapi
PC device 0: ATAPI CD-Rom (1:0:0) MITSUMI CR-48X9TE
PC device 1: ATAPI CD-Rom (1:1:0) HL-DT-ST DVDRAM GSA-4120B
PC SCSI adapter 2: aic78xx
PC device 0: SCSI Disk (2:0:0) WDIGTL WDE9150 ULTRA3
PC device 3: SCSI Tape (2:3:0) TANDBERG TDC 4200
Devices accessible to Amos as SCSI devices
Amos device 0:
Amos device 1:
Amos device 2:
Amos device 3:
Amos device 4:
Amos device 5: ATAPI CD-Rom (1:1:0) HL-DT-ST DVDRAM GSA-4120B
Amos device 6: SCSI Tape (2:3:0) TANDBERG TDC 4200
OK
Cancel
Apply

Figure 3-11: SCSI Devices

Even though other ATAPI compatible devices, such as disk drives and CD drives, may appear in the upper panel, do not map your NTFS formatted SCSI Drive on the Eagle 760 or the NTFS formatted IDE disk drives to an AMOS disk device. This will corrupt the data on the drive and make the system not bootable.

The system drive is always formatted as NTFS for use by Windows system. AMOS only boots from an **AMD** disk file stored in the AMPC folder of the NTFS system drive. Only map true AMOS formatted drives in the SCSI Devices configuration. Note that ATAPI compatible IDE CD-ROM drives are listed as SCSI devices, even though they are not actually on the SCSI cable.

For maximum speed and to take advantage of Windows disk cache you should formatted the system disk drives in the NTFS file system under Windows. To access this go to the <Control panel> find <Administrative Tools> <Computer Management> <Disk Management> program. See Chapter 6 for more details.

To un-assign a device, simply drag the yellow double-headed arrow from the lower box to the upper box and drop it. If there is no assignment in the lower panel, the SCSI command from AMOS will show no devices.

The AMOS drive IDs do not need to be the same addresses as the physical device detected under Windows. If you want to add an older AMOS formatted drive to the system configuration, it must be mapped to one of the 5 remaining AMOS device IDs. This mapping must be done first before generating the disk driver. A new disk driver must be generated for this older drive. Log to DVR: and create a driver with FIXLOG, use SCZPC.DVR as the input driver name. Enter the number of logicals and the SCSI ID mapped in the screen above. Save the new driver with a new name like SCZ.DVR. Then modify a

TEST.INI and add DEVTBL, BITMAP, SYSTEM & MOUNT statements as with any other AMOS system.

Saving The Configuration

After setting up all the configuration screens described in the previous section, click on [OK]. Then make sure to select {**EXIT**} from the <File menu>. This action will **write** the new configuration for the system into the System Registry on the hard disk.

When you select the {Exit}, the next box you will see is the Confirm Quitting AMPC box. Click on the [**Quit**] button.

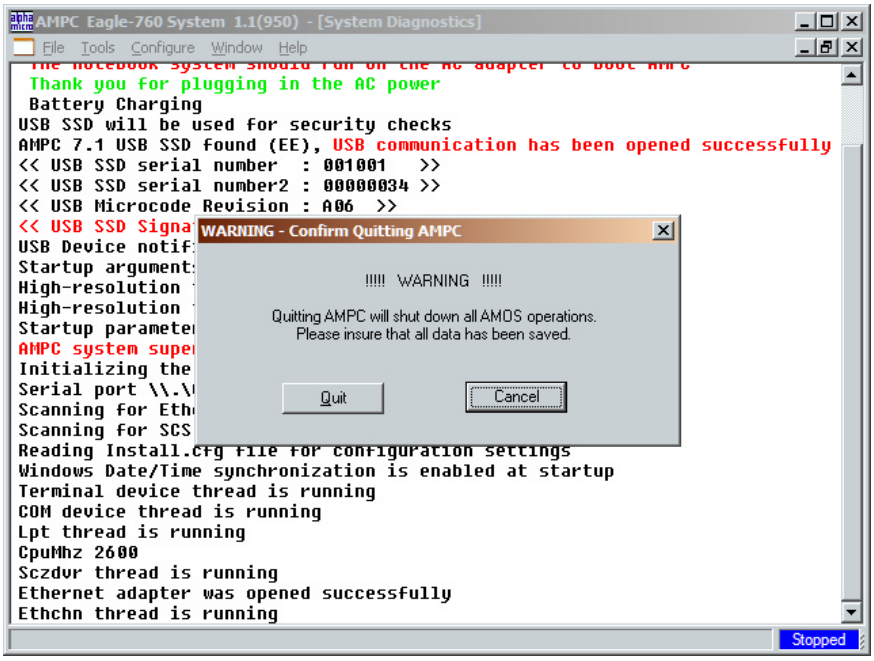


Figure 3-12: Exit & Quit to Save the Configuration

When you select the Quit button, the AMPC Shutdown warning box will be displayed and the program will exit. The {**Reboot**} selection in the <File menu> will power down the system and restart. The system must go through the system POST phase and the SCSI scan phase, which takes a while. To shut down and power off the Server and stay off, *Select*>[**Shutdown]** from the {File menu}. Both {**Reboot**} and {**Shutdown**} will flush the disk caches.

Other AMPC Information & Tools

If you select the {Help} item from the AMPC Diagnostics window you will see the current version of the AMPC software and information on the software libraries in use.

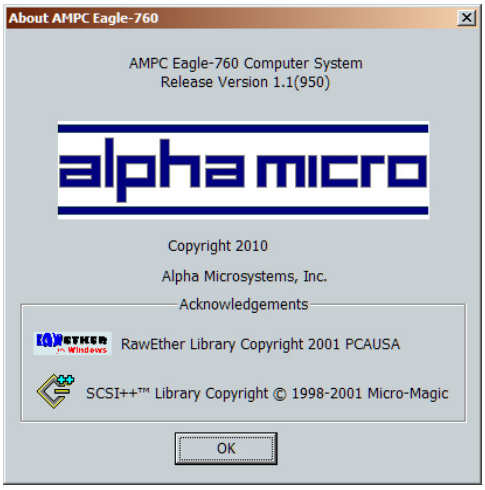


Figure 3-13: About AMPC

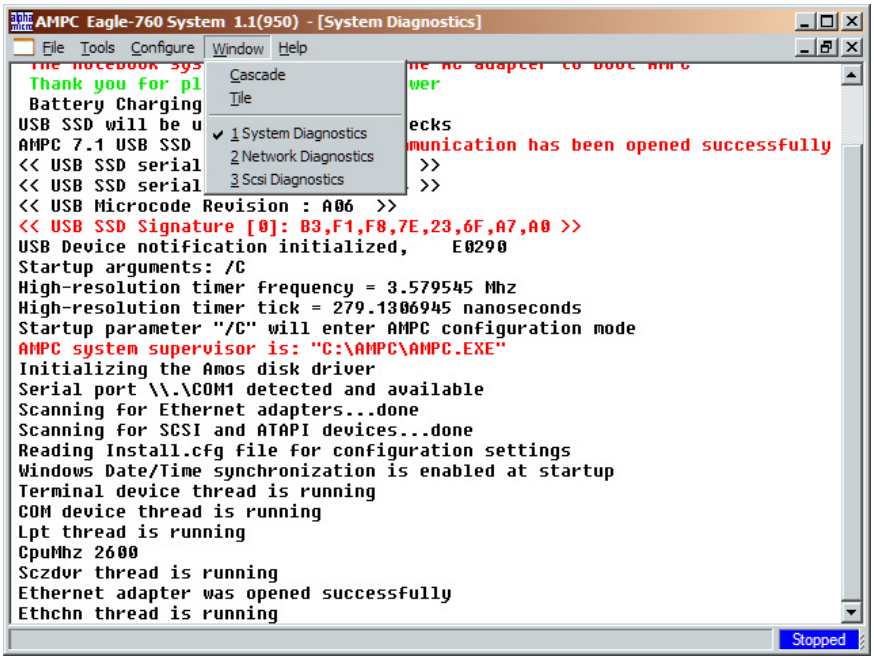


Figure 3-14: Diagnostic Windows

The other diagnostic information windows are accessed through the pull down box under {Window} of the System Diagnostics screen. These are information windows and are not used very often. Most of the important information is displayed in the first System Diagnostics window. To select the other windows move the mouse cursor over window name desired and left click.

The System Control Panel

To access the Windows system Control Panel select the {Tools} item from the <AMPC System Diagnostics> window. This is shown in Figure 3-15.

This one window has the greatest power and largest options to control the Eagle 760 Servers. If you are familiar with Windows Professional this will be very easy to understand.

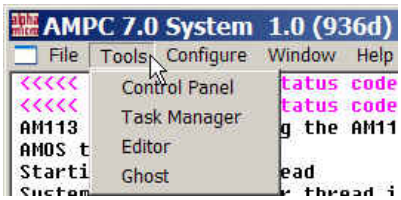


Figure 3-15: System Control Panel

The System Control Panel is also accessed by selecting {System} from the main Control Panel. Please refer to Chapter 6 for a more detailed discussion of these programs. The other tools are used infrequently and should only be performed by the system administrator. The {Control Panel}, {Task Manager}, {Editor} and {Acronis} tools will be covered in Chapter 6.

AMD DISKS AND OTHER HARD DRIVES

AMD Pseudo AMOS Disk

AMPC only boots from an "**AMD**" {**A**lpha**M**icro**D**isk} file located in any AMPC folder on any disk volume. Windows controls the NTFS formatted hard drives where the AMPC folder is placed. The AMPC folders can contain multiple **AMD** files. Each **AMD** file contains the equivalent of one physical hard drive. Inside the **AMD** disk can be traditional disk formatted for 32MB logical or an Extended disk formatted for larger than 32MB per logical. The **AMD** file contains the label block, bitmap, directory structure and files just like any AMOS formatted physical drive.

To give the Eagle 760 far superior disk performance, Windows internal disk-caching software is used. AMPC.EXE works with the AMPC monitor, which makes up the AMOS 8.x operating system. AMPC.EXE opens the **AMD** disk files and reads and writes to these files just like a physical disk drive. The **AMD** file is created from the AMOS Disks tab of the Configuration screen in the AMPC program. Since Windows does the disk caching for AMOS, you do not need AMOS disk cache for these pseudo disk devices. Installing AMOS disk cache on top of Windows cache is slower and less efficient; therefore we advise you not do this. You will be double caching data and AMOS must look up the record in both caches before the disk record is returned. To create **AMD** disk files see the procedure "AMD File Creation".

The **AMD** files themselves can be copied, providing a complete image backup. These **AMD** files can reside on any supported file system, normally NTFS, UDF or FAT32. The copies can be defined to AMOS 8.x through the AMPC configuration program. Windows must perform the copy, which is FAST: about 2 minutes per GB if using an internal hard drive as the destination. This can be slower depending on the drive media being used.

Other Hard Drives

Older AMOS formatted SCSI disks can be accessed for compatibility and to do data transfers, but are slower since Windows doesn't know about the AMOS file system. These disk devices are accessed

through a SCSI library. AMPC monitor disk calls are linked together through the SCSI library with the AMPC.EXE program to provide access. If you are using AMOS formatted disk drives, we do advise you to enable AMOS disk caching for these devices. AMOS 8.x has provided a program to turn off **AMD** drives from being AMOS cached. This is activated by "SET NOCACHE dev:" for the **AMD** disk device in the System Initialization Command File. With this scheme you get the maximum performance from both disk device types. Older RAID systems and disks are plug and play with AMOS 8.x through this method.

AMD FILE CREATION

Since AMD files are used extensively in Eagle 760 Servers, let's discuss how to create a new AMD file. The first step is to select the Configure option from the System Diagnostics window.

How to create a new AMD disk file

Select the AMOS Disks tab. Find an empty disk subsystem line (Disk Subsystem 3 in this example) and place the mouse cursor over *AMOS Disk* window and left click. With caps lock on, type (**BIG)** and with the mouse *Select*> [**Create**] button.

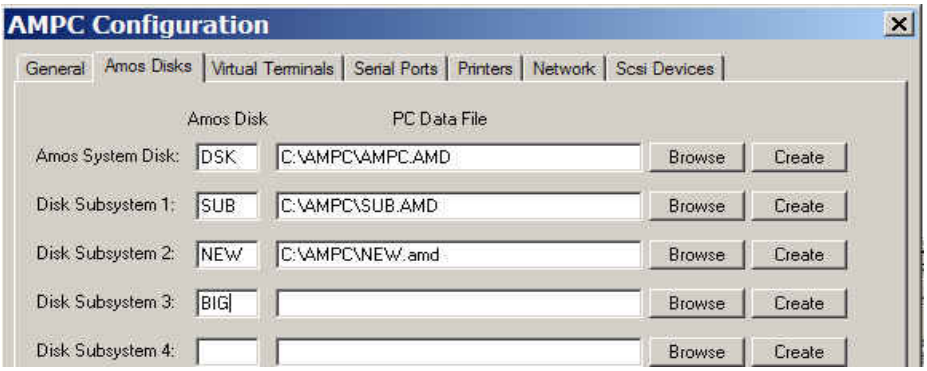
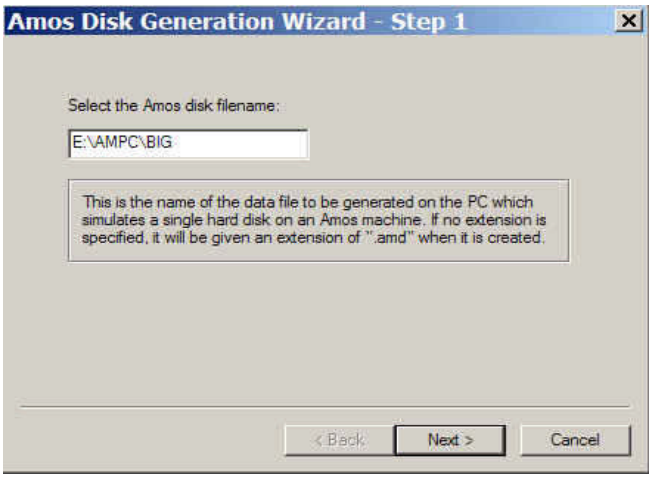


Figure 3-16: Creating an AMD Disk File

In Step 1, specify a location for the **AMD** file and file name. The window will have an input box, so type in the location of the new disk file. The E: drive normally is reserved for the customer disk files and this will be the case for our example. We will create the E:\AMPC\BIG.AMD file as shown below.

To finish step 1, *Select*> [**Next**] button.

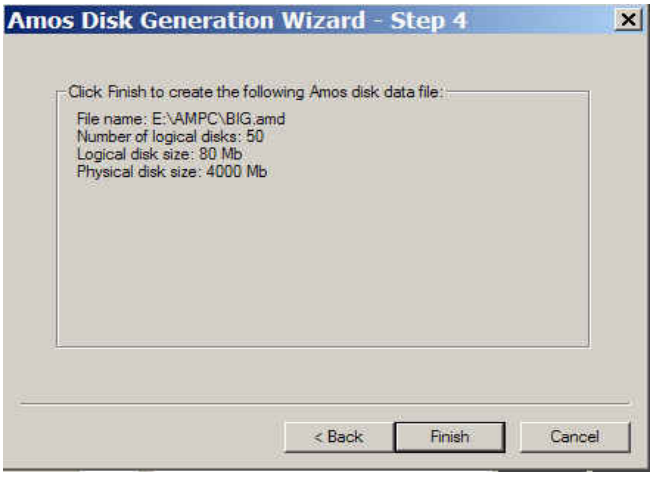

Amos Disk Generation Wizard - Step 1
Select the Amos disk filename:
E:\AMPC\BIG
This is the name of the data file to be generated on the PC which simulates a single hard disk on an Amos machine. If no extension is specified, it will be given an extension of ".amd" when it is created.
< Back
Next >
Cancel

In Step 2, Input the **number** of logicals and *Select*> [**Next**] button.

Amos Disk Generation Wizard - Step 2
Enter the number of logical drives for this disk:
50
Logical drives exist within a physical drive to make the data more manageable. All logical drives within a physical drive are the same size.
< Back
Next >
Cancel

Step 3 is to specify the **size** of each logical drive in MB. Fill in the input box and *Select*> [**Next**].

Step 4 finishes the create process, *Select*> [**Finish**] button. The system will create the 4GB disk file on E: as shown on the right. Be patient – this process can take several minutes. This will write the initial AMD disk file on the hard drive.


Amos Disk Generation Wizard - Step 4
Click Finish to create the following Amos disk data file:
File name: E:\AMPC\BIG.amd
Number of logical disks: 50
Logical disk size: 80 Mb
Physical disk size: 4000 Mb
< Back
Finish
Cancel

The generation of the **AMD** file requires 100% of the CPU time. Do not have AMOS 8.x booted during this process. When finished, the system will clear the Step 4 menu off the screen and will show the new file name filled in the input box, as shown in Figure 3-17.

Select> [**OK**] to save this new setup to memory. The next step is to *Select* >File> [**Exit**] then [**Quit**] from the <AMPC Diagnostic> window to write this new information into the system registry. You must [Quit] the program in order to save the settings.

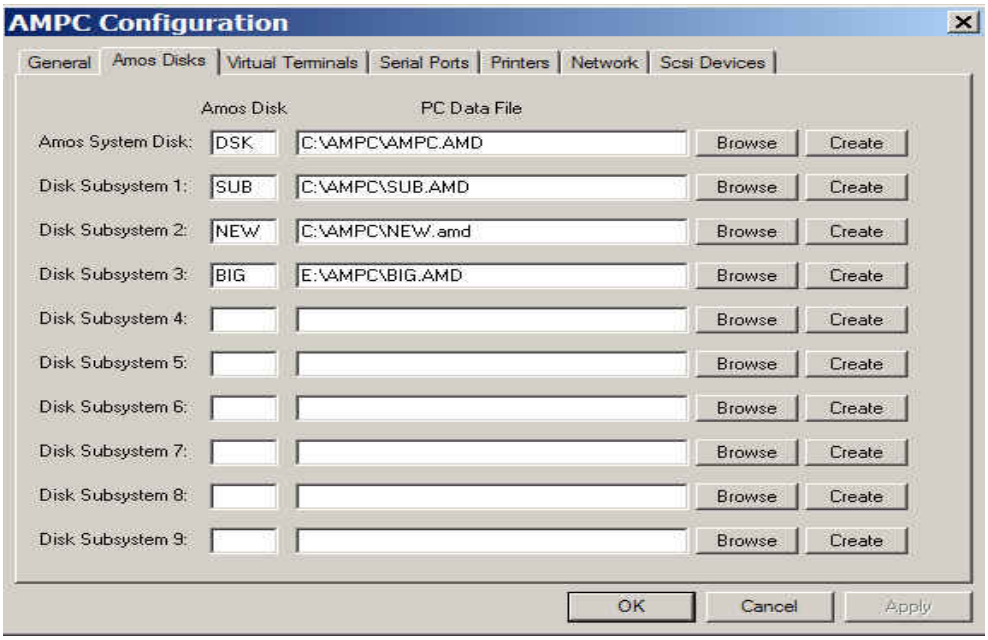


Figure 3-17: AMOS Disks Defined

Once this is done, you can inspect the location of the new AMD disk file. If you select the control panel and browse to the E: drive and find the AMPC folder you will see the newly created BIG.AMD disk file, as shown in Figure 3-21.

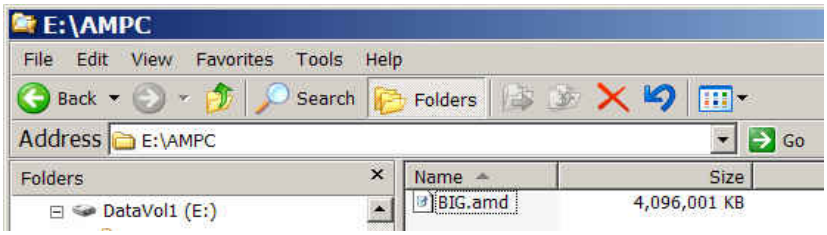


Figure 3-18: Location of BIG.AMD

Modifying the TEST.INI & Initialize the new Pseudo disk file.

From AMOS, the next step is to modify a TEST.INI file to add the new BIG disk device. Select the {Boot AMPC} shortcut in the <AMPC> folder and boot up AMOS.

```
LOG   SYS:  ENTER
VUE   TEST.INI   ENTER
```

1. Add **DEVTBL BIG**
2. Add **BITMAP BIG**
3. Add **SYSTEM DVR:BIG.DVR**
4. Add **MOUNT BIG: ; After the last system command.**

Finish and save the TEST.INI. Now,

LOG DVR: ENTER
COPY BIG.DVR = PCDSK.DVR ENTER **;** to create the disk driver.

All **AMD** disk files use a copy of the PCDSK.DVR.
Once a copy of the disk drive is in DVR:

LOG OPR: ENTER

MONTST AMPC,TEST.INI ENTER

Please refer to AMPC.INI in the appendix for the resulting INI file from this discussion. The MONTST will boot the new configuration. When the system finishes the boot,

LOG OPR: ENTER

In OPR: find INTNEW.CMD file, which can help initialize all platters of a new device. Edit this file and change the device spec from **NEW** to **BIG** and save the file. Then execute the INTNEW.CMD file to initialize all 50 platters of the BIG: device. The logical platters must be extended format to take advantage of the space allocated in the BIG1 disk file. For an alternate way, see Chapter 7 on the xAdmin utilities for other DO files that can initialize disk platters.

INTNEW ENTER

Windows superior disk caching makes Extended Logical disks run at virtually the same speed as Traditional Logicals.

Once all the platters are initialized, you can COPY or MTURES any data to the new disk file. Normally, start by coping DSK0: to BIG0: to create a bootable logical.

COPY BIG0:[ ]= DSK0:[ ] ENTER

Chapter 4 - AMOS Overview

This chapter is a brief overview of the AMOS operating system. The topics and procedures it discusses are:

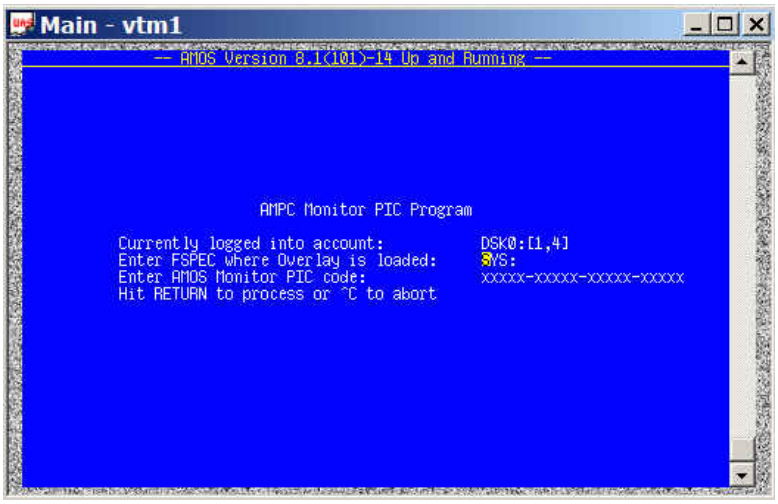
- Installing the AMOS 8.x PIC code
- Disk driver used by AMPC
- System Device names and alternate booting
- AMOS account organization for Server data
- User names and how to log on to AMOS
- The terminal keyboard and correcting typing errors
- Streaming tape drives and capacities

INSTALLING THE AMOS PIC FOR ADDITIONAL AMOS USERS

To enable additional AMOS users, a Product Installation Code {PIC} needs to be entered at the Operator Console. This twenty digit code should be supplied by your VAR when you order additional AMOS users. The PIC code for the number of users you ordered with your system originally is installed at Alpha Micro as a part of the system manufacturing process. To enter PIC, from AMOS command level, type:

```
OSINST/U ENTER      ; for USB-SSD security device
```

Figure 4-1 shows a prompt requesting the PIC. First type a down arrow to get to the PIC code field. With Caps Lock on, type in the code, being sure to use the correct letters & numbers. Be sure to include the "-" between the 4 sets of 5 characters, and press ENTER.


Main - vtm1
-- AMOS Version 8.1(101)-14 Up and Running --
AMPC Monitor PIC Program
Currently logged into account: DSK0:[1,4]
Enter FSPEC where Overlay is loaded: SYS:
Enter AMOS Monitor PIC code: xxxxx-xxxxx-xxxxx-xxxxx
Hit RETURN to process or ^C to abort

Example:

GLE41-51548-576LE-75EFW ENTER.

The next prompt asks to confirm that the entered PIC is correct. Check your entry, and if it's correct, type **Y** ENTER.

Figure 4-1: OSINST PIC Program

DISK DRIVER FOR AMPC.MON

For the AMPC.MON, the main disk driver is different than for other AMOS based systems. When building a new monitor using the MONGEN program, specify the ACE.DVR. Do not use PCDSK.DVR. Additionally, include your Language "LDF" file either ENGLSH, LATIN1, BRITSH or your own when performing the MONGEN process. To place the new version in the AMPC folder, TODOS AMPC.MON or LOG OPR: and MONTST AMPC. The MONTST executes the TODOS for you.

THE SYSTEM DISK AND ALTERNATE BOOT

The Eagle 760 system software is always on DSK0: where the operating system looks for most programs during the boot process. Usually the **AMD** file containing DSK0: is on the largest hard disk where the pseudo disk file is located.

To *Configure* the system for Alternate Booting change the {**DSK**} device mapping to a different **AMD** filename. Then using the {Boot AMPC} shortcut in the C:\AMPC folder will boot the system with the newly defined disk file. This procedure replaces the older warm boot process and is more convenient and flexible. A single logical 32MB **AMD** file has been provided for this purpose. The pseudo disk filename is SUB.AMD in the C:\AMPC folder. Unlike warm boot tapes, this disk has the complete AMOS 8.x operating system release with the system PIC codes installed. No more searching for the correct warm boot tape for the system!

EAGLE760 Servers have a DVD drive installed. You have the option of booting from this device but NOT into AMOS as you might be used to. Booting from a DVD loads the system from Acronis True Image backup. This program is used to load an empty hard disk drive with the AMOS 8.x and Windows software. This usually is a special circumstance when it is not possible to boot from any pseudo disk drive. This will be covered in detail in Chapter 6.

DEVICE NAMES

AMOS uses device names to identify the different pieces of equipment that make up the Server. Each disk drive and other storage devices have their own device names {terminals and printers are defined somewhat differently}. These device names are defined in the AMPC.INI system initialization file.

Alpha Micro device names conform to a specific format to make it easy for you and the Server to refer to the same piece of equipment. All device names contain three letters and a number, and end with a colon (:). For example, DSK#: where # is a decimal number up to 3 digits, DSK is usually the name for a hard disk device and STR0: is the name of a streaming tape drive. Having names for each device let's you specify which device is to be used for a specific command. This permits you to see a list of files from just one disk drive, or copy data from one disk logical to another drive.

Normally the Servers are setup as two logical drives C: & E: for the first physical hard drive formatted as NTFS under Windows. Each drive should contain an AMPC folder where multiple **AMD** disk files should be located. The Eagle 760 system only boots from the **AMD** pseudo drives. The standard boot drive that is shipped is C:\AMPC\AMPC.AMD which is 4 logical drive of 32MB each, contains logical devices named DSK0: DSK1: DSK2: DSK3: The different pseudo disk drives may be generated with different number of logicals.

The example here will be the DSK device with 12 logicals.

- When the Server boots from the AMPC.AMD disk file (the normal occurrence), the system drive will be referenced as 12 disk devices named DSK0: DSK1: … DSK11:
- If you change the Configure menu to boot the Server from a different AMD file, the first pseudo drive might be referenced as disk devices named WIN0: WIN1: to WIN11: and the new pseudo disk drive is named DSK0:

Remember, this is only an example. Your Server may be set up to reference the hard disk as more or less than 12 logical devices.

The disk device containing the system initialization command file and other system software, the device AMOS "boots from," is always called DSK0: Normally this is the first logical device of the pseudo disk AMPC.AMD. When you change the device you boot from, it will also change the names of other devices on the Server. You must change the Configuration to specify each **AMD** file to be assigned a disk device name like DSK or SUB or NEW etc. A different system initialization command file on the alternate drives may define devices differently.

Once the Server is booted, to see a list of the disk devices on the Server, type SYSTAT and press RETURN. The end of the display lists the available disks. DEVTBL can show you the relationship between physical **AMD** devices and logical drives within the **AMD** drive. With original AMOS formatted SCSI drives, the actual disk drive is called the "physical device" and each partition is a "logical device". These disks are still accessible if a new disk driver is generated using FIXLOG. Use SCZPC.DVR as the input driver, specify the number of logicals and the mapped SCSI ID, give the driver a name. Save the resulting driver in the DVR: account.

DISK ACCOUNTS

Disk accounts are an organizational feature the Alpha Micro Server uses to help keep track of data. Instead of searching through one enormous list of files for the specific one you're looking for, the AMOS operating system is designed to group files into "accounts," also know as Project Programmer numbers [P,PN].

A two-part account number identifies accounts. The two numbers are separated by a comma and enclosed in brackets. The first number is called the project number; the second part the programmer number. [1,2], [200,0], and [34,11] are examples of account numbers. Since they are actually octal numbers, the digits 8 and 9 aren't used, and the highest possible number is [377,376] and the lowest is [0,1].

The two-part structure of the account number allows another level of organization. Besides grouping files into accounts, group related accounts in the same project. For example, all accounts containing files dealing with payroll can be in project 50 ([50,0], [50,1], etc.).

Accounts are called "disk accounts" because each account is specific to a particular device—usually a disk. For example, you may have the account [63,1] on both DSK0: and DSK1: Though these accounts have the same account number, since they are on different devices they are different accounts, and contain different files. As a security measure, a password can be assigned to each account on each disk. Anyone who doesn't know the password cannot log into the account. See Chapter 5 for how to assign passwords.

To display a list of all the accounts on any device on the Server, use the PPN command. Type **PPN** and the name of the device you want the list for, and press ENTER. To see all the accounts on DSK0: type:

```
PPN DSK0: ENTER
```

To show a list of all the files in any account, use the DIR (short for *directory*) command. To see a list of the files in the account you are currently logged into, type:

```
DIR/W ENTER
```

While the DIR command will list the files from any account, to access the files in an account, the user must log into it, as described in the next section. Now that you have a general idea of what disk accounts are and how to use them, you can decide how to organize your own files into accounts. If you want to create more accounts on a hard disk, see Chapter 5.

You can find more information on the PPN and DIR commands in the *System Commands Reference Manual*.

LOGGING ON

The LOG command serves two purposes: it identifies the user to the Server and lets the user choose what disk account to access. The user must log onto the Server after logging off or after booting the system. Enter the disk account desired. For example type:

```
LOG [25,1] ENTER
```

Entering your user name instead of an account number is allowable. The user is logged into the root account defined when the user name was set up. For example:

```
LOG CARRIE SMITH ENTER
```

This logs into Carrie Smith's root account.

If the account has a password assigned, the user is asked for the password before the account transfer takes place. The account number and password list for each device is separate, so duplicate account numbers on different disks can have different passwords. Once the user is logged onto the system, LOG is used to switch to different accounts. The user name is not needed again, just the account number.

To completely specify which account is desired, enter both the device and account number. For example:

```
LOG Dsk2:[36,14] ENTER

User Name: Alex ENTER

User Password: xxxxxx ENTER
```

The password above is never echoed on the screen, type the password up to 6 characters long and press return. You only have to enter the device name if the same account exists on more than one device. If the account does not exist, a message is displayed on the screen indicating an invalid account number.

For more details about the LOG command, see the *System Commands Reference Manual*. For information about user names, see the *System Operator's Guide*.

THE TERMINAL KEYBOARD

The first step in communicating with AMOS is to be able to type your instructions on the terminal keyboard. Take a moment to look at your keyboard so you can easily locate these keys later:

KEY	DESCRIPTION
RETURN	RETURN (Sometimes labeled ENTER or with an arrow that curves to the left) is the carriage return key. Just as you press the carriage return on a typewriter to begin a new line on the page, a RETURN tells the computer you are ending a line of input and are beginning a new line. The computer does not normally process an instruction from you until you press RETURN to let it know you are finished with that line.
RUBOUT	RUBOUT Is the deletion key; it backspaces AND deletes. It may be labeled RUB or DEL. If you make a mistake while typing an instruction to AMOS, you can erase it using the RUBOUT key.
SHIFT	The SHIFT key on most keyboards acts much like the shift key on a typewriter. By holding down SHIFT, you can type upper case letters and the symbols on the upper half of the keys with two symbols.
CAPS LOCK	While the CAPS LOCK key is enabled, letters you type appear in upper case. The CAPS LOCK key on most keyboards does not affect keys other than letters.
ESC	This key may be labeled ESCAPE or ALT MODE. It is used with several application programs (such as AlphaVUE) to signal the end of input, or to switch between command modes; however, you do not use ESC at AMOS command level.
CTRL	Use the CTRL (or CONTROL) key with other keys to enter a different kind of character—a "control character." AMOS and much of the software on the computer interpret control characters as special instructions. To type a control character, hold down the CTRL key and press the other key. For example, to type a Control-C, hold down the CTRL key and type the letter C. In this book, we indicate control characters this way: CTRL/C. Appendix B lists some of the control characters AMOS recognizes.

Table 4-1: Special Function Keys on the Terminal Keyboard

Correcting Typing Mistakes

To correct any mistakes you may make while typing a command line as long as you have not yet pressed the ENTER key. You can:

- Press RUBOUT to erase single characters
- Type CTRL/U to move the cursor to the beginning of the line
- Type CTRL/C to tell AMOS to ignore the line

See the table above for explanations of RUBOUT and control characters.

If you press the ENTER key before correcting the mistake, and the command entered was not a valid AMOS command, AMOS informs the user it did not understand the command. For example:

```
PRIMT  ENTER
?PRIMT?
```

(You meant to say PRINT.) After enclosing the unknown command in ? ? the AMOS prompt will display. You can now try again.

If the AMOS line editor is enabled for the terminal, you can recall a previous line to the screen by typing CTRL/R. In the sample conversation above, press CTRL/R at the AMOS prompt to recall the line `PRIMT` to the screen. Use the ← key to move back to the "M" without erasing characters, and then type an "N" to overwrite the "M." Press the ENTER key to enter the command again.

Your particular terminal undoubtedly has many features we haven't covered in this section. For complete information on using your terminal, refer to the owner's manual that accompanied it.

STREAMING TAPE

There are several ¼" streaming tape drives available for the Servers: the AM-629, AM-651 and AM-652. For information on transferring data to and from streaming tape, see the *System Commands Reference Manual*. For information on cleaning tape drive heads, see Chapter 8.

Backup to tape can be executed just like on any other Alpha Micro system using the MTUSAV program. MTUDIR & MTURES will work as on other systems. Warm boot tapes are no longer supported under AMOS 8.x Servers.

The best performing tape drives are the AM-651 and AM-652 drives. These drives have a wide LVD SCSI interface so the data transfer rate is high, 20MB/sec. These drives contain a 8MB buffer for data, so backups are very fast. The wide SCSI tape drives are the preferred tape devices for the larger Eagle 760s.

For the Eagle 760 Server, the SCSI disk interface board can support both single ended and wide devices. Both connectors are available for use. Normally, the single ended AM-629 4-8GB tape drive is installed with a narrow cable. Maximum data transfer is 10MB/sec. When installing this drive, make sure the Terminator SIPs are installed in the drive. Optionally, the AM-651 or AM-652 tape drives can be installed in the Eagle 760 system with a wide SCSI cable and internal terminator. The AM-652 will backup about 21GB/hr. The AM-629 will backup about 2.7GB/hr.

Loading and Unloading Tape Cartridges

To avoid static discharge, always ground yourself by touching the metal chassis before loading or unloading a tape cartridge.

1. Press the button on the drive's front panel to open the tape drive door.
2. Hold the cartridge with the metal side down. The end of the tape cartridge with the write-protect switch will enter the drive first.
3. Insert the cartridge into the drive. Keep pushing until the cartridge stops, and then close the door. After the door closes, the drive positions the tape, after which it is ready for use. With front loader drives the 65x models take the tape from the operator once it is installed about half way into the drive.

Before unloading the tape cartridge, be sure the tape activity light is out. To unload, press the tape door release button and remove the tape from the drive. On front loader drives, press the eject button.

Tape Capacity

The storage capacity of the tapes depends both on the drive installed and the type of tape cartridge being used. The following table shows the different types of tape cartridges available and the corresponding capacity for the AM-629, AM-651, and AM-652 drives.

The tape drive manufacturer has specified which cartridge tapes that may be used. Using tapes other than those recommended might result in excessive head wear.

Device	Data Cartridge	Maximum Capacity
AM-629	DC6525	525MB
	DC9100 (Magnus 1.0)	1.0GB
	DC9120 (Magnus 1.2)	1.2GB
	DC9200 (Magnus 2.0)	2.0GB
	DC9250 (Magnus 2.5)	2.5GB
	SLR5	4 / 8 GB
AM-651	SLR5 (read only)	4 / 8 GB
	SLR7	20 / 40 GB
AM-652	SLR5 (read only)	4 / 8 GB
	SLR40	20 / 40 GB
	SLR50	25 / 50 GB
	SLR60	30 / 60 GB

Table 4-2: Supported ¼" Streamer Data Cartridges

OTHER MOUNTABLE MEDIA

The other types of mountable media for the Eagle 760 Servers are Blu-ray and DVD media. The Eagle 760 can be equipped with a DVD-RAM drive.

The DVD-RAM drives will read CD-ROM, CD-R, CD-RW, DVD-RAM, DVD-ROM, DVD-R and DVD+RW media. This drive will write to CD-R, CD-RW, DVD-RAM, DVD-R and DVD+RW media.

The AMOS Bootable Recovery CDs provided with the Servers are normally written on DVD-R media.

Since the **AMD** files are readable while AMOS is booted, the Console terminal VTM1 can select the Windows control panel task and copy the **AMD** files to DVD as a backup. The one restriction is not to have many users on the system during the copy. When the system is finished writing, *select*> Eject from the Explorer application. Label the media and save in a safe location.

The better way to perform backups is Streamer tape with MTUSAV program. This is the fastest way to backup data. The next fastest is using MAKDVD program to write to DVD-RAM media. This media is re-useable to a point. The write to DVD can be selective on a logical basis. Say you wish to only backup 6 out of 10 logical drives. As long as the data will fit onto a 4.7GB DVD-RAM media, you can back up this data. The AMOS system does not have to be rebooted. Once the MAKDVD program finishes the write, Execute the DVD program and it will mount the 6 DVD platters, with the backed up data.

Operator Note: Please label all the disk logicals on the Server before backup. The label blocks will be written to DVD-RAM and displayed when the media is mounted with the DVD.LIT program. This will help in identifying where the data came from. Then restoring a file is simple. Copy the files needed to the original disk location by identifying the correct data platter from the DVD logical drive. File look up and restore from DVD-RAM is faster than tape!

Chapter 5 - AMOS Software Applications

The Alpha Micro Server is extremely versatile and can do many different things. The next step is to learn something about the software that can run on the Server. This chapter deals with some of the questions you may be asking:

- What software is available for Alpha Micro Servers?
- What Alpha Micro documents should I read next?
- What about On-Line Documentation?

AMOS AND DELETING OLD UNSUPPORTED PROGRAMS

AMOS, the Alpha Micro Operating System, supervises all of the programs that run on the Server. Regular updates to the AMOS operating system and its accompanying system software are available from your VAR. There are different revision levels of AMOS. The Eagle 760 Server uses AMOS 8.2(102)-8 or later.

Please do not mix older versions of AMOS on the new Eagle 760 Servers. They are not compatible and may cause instability. To eliminate older programs that are not supported under AMOS 8.x, **LOG OPR**: and execute **ERAS70 DSK0:** This will erase all unsupported files that have been named in previous versions of AMOS32 and AMOSL on DSK0. The only filenames that will not be erased are multiple copies with different filenames that were not released by Alpha Microsystems. Any application software will remain on DSK0: with no change. Clean up of the system can be done after you have tested your applications and are comfortable with the results. The files that should be erased are older versions of the monitors, old VME disk drivers, and SASI disk drivers. Even older INIs, which defined older hardware, should be erased from DSK0: The older program files merely clutter up the disk and take up backup space.

INTRODUCTION TO AMOS SOFTWARE

This section will give you an idea of some of the software available for the Eagle 760 Servers.

Programming Languages

The AlphaBASIC programming language is a standard part of the software for the Server. AlphaBASIC contains many business-oriented features. AlphaBASIC also provides an ISAM (Indexed Sequential Access Method) interface. AlphaBASIC PLUS, also provided, contains advanced features such as sophisticated data structures and program control constructs. Please see your VAR for information on other programming and assembly languages available for the Server, such as AlphaC.

Networking

The Networking software, AlphaNET and AlphaTCP, are included in the AMOS 8.x release.

AlphaNET is Alpha Micro's 2nd generation software to transfer files, exchange information, and share resources between different models of Alpha Micro computers. It is provided primarily for compatibility with the older AMOS system that might be on a network.

AlphaTCP is Alpha Micro's 3rd generation networking software allows the Server to transfer files, exchange information, and share resources between different computers on the Internet. This package also provides Telnet and network printer services. Web Server and e-mail Server can be set up under AMOS 8.x. Please read the AlphaTCP Administrators Guide for more information on this flexible software.

Text Preparation

To create documents on the Server, there are multiple word processing programs available. AlphaVUE, a screen-oriented text editor, allows the user terminal to create and change documents. The text of your letter or report is displayed on the terminal screen as you enter it with a keyboard. With AlphaVUE, you can move quickly through the document, correcting and adding words, inserting or deleting lines, moving paragraphs, and so on. AlphaXED is a programmers screen editor that has a few different features but still does the same thing as AlphaVUE.

See the section on "Office Information Products" below for information on the AlphaWRITE word processing package.

Utility Programs

The standard AMOS release contains over 200 utility programs and device drivers. In addition, because of the unique way AMOS handles commands, you can easily create your own utility programs.

Some of the standard utility programs allow you to do such functions as: copy, rename, and erase files; sort the data inside files; use a task management system to schedule and perform background tasks that run without operator control; print files while you perform other tasks at the same time; use the ISAM system to organize and retrieve information quickly; and back up data automatically at a convenient time when nobody is using the computer (in the middle of the night, for example).

Application Programs

Your local Alpha Micro VAR has a variety of programs available for these Servers, many of which are aimed at specific business needs such as: general accounting, dental office, legal office, real estate management, manufacturing inventory control, educational learning systems, restaurant management, medical office billing, laboratory analysis, and many others. Please see your VAR for details.

Office Information Products

Several office information products are available separately from your local Alpha Micro VAR. The office information products series includes:

- AlphaMAIL is an electronic mail system for sending and receiving messages and reminders among multiple users and, combined with AlphaTCP, over the Internet.
- AlphaFAX, an easy to use faxing program provides the ability to automatically send faxes from within application programs, just like printing to a local printer.
- MULTI is a window-based environment manager, letting the user access multiple programs on one terminal at the same time, and providing a number of desk accessory features, including a phone list, alarm clock, notepad, and others.
- VersiCOMM is a versatile, general-purpose communications system, capable of performing a broad range of communication services.

See your VAR for more information on these and other Alpha Micro office information products.

When upgrading to AMOS 8.x, please check for update patches to the above software packages. Most software had to be updated to run under AMOS 8.x.

ON-LINE DOCUMENTATION

On-line documentation is installed on each system. The Adobe Acrobat Reader is also installed on the Server. The Reader can be used on the Console to review the on-line PDF documentation files. To access the PDF files, use the Control Panel interface to browse to a directory and find the PDF file you desire to read. Double click on the PDF filename and the Acrobat reader will launch and display the document. Not all documents are on all models of the AMOS 8.x Servers. Only the devices installed on the particular model of the Server have the corresponding documentation. Other documentation is shipped with each Server. These will be the manuals for the installed devices from the peripheral manufacturer. Some documentation files are in TXT, DOC or HTML formats.

AMOS documentation related to the server can be found in C:\AMPC\DOC folder.

Documents that may be included are:

- Acrobat.Pdf on the reader itself
- Acronis - We highly recommend that you read the Acronis Help on the workings of this useful Backup and Restore utility
- AMPCLiTE documentation can be accessed through {Help} {Contents} from the emulator window
- AMPCTerm documentation is accessed through {Help} {contents} from the emulator window
- PCI serial port adapters manual
- USB serial port manual

ADDITIONAL DOCUMENTATION

Now that the Server is up and running, you are ready to start exploring the Alpha Micro world. Your guide to the new territory is the Alpha Micro software documentation. This section gives the user an idea of which documentation to consult for directions depending on the path you want to take.

The Eagle 760 Servers are members of the AMOS family of Alpha Micro computers, and the software documentation that applies to other AMOS based computers applies to these new Servers. But some of

the older documentation is out of date with respect to certain process and commands executed on the new AMOS 8.x Servers.

You may purchase any book mentioned in this manual separately; in addition, a multi-volume software documentation library is available containing all the AMOS software books listed below. You can order any of these books by calling your VAR. To find which documents are available, use an Internet browser and look up www.AlphaMicro.com and select [Support> Documentation]. An index into all Alpha Micro documents available will be displayed. Documents can be downloaded and viewed by the Adobe Acrobat PDF Viewer.

Here's an idea of what to look at next:

"I Want To Start At The Beginning"

If you have never used AMOS before, we recommend you read the *AMOS User's Guide*. This book is a practical introduction to the Alpha Micro computer, containing instructions for many of the procedures used every day. It expands on many of the topics discussed in Chapter 4.

"I Want To Learn How To Maintain My Server"

If you are going to be responsible for making data backups, adding new PC's, terminals or printers to the Server, running disk diagnostics, and otherwise managing and maintaining the Server, we highly recommend you read the *System Operator's Guide*, and obtain a copy of the *System Commands Reference Manual* and the *System Operator's Guide to the System Initialization Command File*.

The first manual explains how to perform the maintenance and diagnostic procedures required by the Alpha Micro system software. The second book will prove an invaluable reference tool—it contains short reference sheets on over 200 AMOS programs. The third book describes how to change the system configuration by editing the AMPC.INI file. Please refer to Appendix G for INIs used on Eagle 760 Servers.

"I Want To Write Computer Programs"

If you have programmed in BASIC before, and want to learn how to use the AlphaBASIC programming language, refer to the *AlphaBASIC User's Manual*. Also refer to the *AlphaBASIC PLUS User's Manual* for information on the enhanced AlphaBASIC PLUS programming language.
If you are an experienced assembly language programmer who wants to write machine language programs for the Alpha Micro computer, we recommend you read these books:

- *Alpha Micro Instruction Set*, which contains information on the assembly language instruction set used by the Alpha Micro computers.
- *AMOS Assembly Language Programmer's Manual* which contains information on the assembler, linkage editor, object file librarian, and global cross reference program used by the assembly language programmer.
- *AMOS Monitor Calls*, which contains information on the interfaces to the AMOS operating system available to the assembly language programmer.

- *AlphaFIX User's Manual*, which contains information on the screen, oriented debugger program, AlphaFIX.

What Third Party programs are known to work on AMOS 8.x?

The following Alpha Micro third party programs have been reported as working. For more details, contact the software developer.

- AlphaFAX Version 2.0
- Multi Version 2.1(192)-14 with the latest patches for AMPC
- AlphaMAIL Version 1.2B with EMAIL.LIT updated,
- AlphaWRITE Version 2.2
- AlphaCALC Version 2.0
- VersiCOMM 3.1(399)
- ZCMP 2.1(105)
- Folders 3.0(109)
- AutoLog Ver 3.5(305) - works with this known restriction:
  - SLAVE.LIT - works on the PCCOM ports, does not work on the SIO ports
- MSP
- SSD Protector 2.8 - both PIC.LIT and CODE.LIT
- SFORCE - both Versions 1.0(112) and 2.2(135)
- Metropolis Version 7.5
- VICS Models & Macros Version 7.2
- SuperVUE Version 3.1h
- IMS Version 5.0(18)
- Madics software
- DART, ESP, Glue Version 2.2 from the ESP consortium
- Starr-Accounting Version 4.1
- Ultra-Safe Version 3.5(150)

What Third Party programs do not work on AMOS 8.x?

The following Alpha Micro third party programs have been reported as not working, or with special limitations under AMOS 8.x. For more details, contact the software developer.

- TALKTO - does not work
- SLAVE.LIT - works on the PCCOM ports, does not work on the SIO ports
- DataVUE - does not work. This package does not work on Roadrunner systems either.

Chapter 6 - System Administration

"System Administrator" is the title we give the person whose job it is to make sure the Server runs efficiently, and who has access to the files and programs that comprise the system software. This chapter explains some of the tasks that the System Administrator should accomplish. The first half of this chapter addresses the AMOS only tasks, and the latter half of the chapter covers the Windows Administrative functions.

AMOS provides many program tools to support system administration functions. This chapter covers many of these procedures, including:

- Alternate Booting the AMOS Server
- Allocating disk accounts
- Modifying the system initialization file to
  - Add Printers & Spoolers
  - Add Jobs and Terminals
  - Change memory allocations
- Defining logical devices
- Disk diagnostic procedures
- Backing up the Server
- Windows Administrative programs and Backup Procedures

ADMINISTRATIVE TASKS

Alternate Booting the AMOS Server

Alternate Booting the Server is an Administrator task. This is a new procedural concept that needs to be understood for all AMOS 8.x Servers. This task is only performed to reconfigure the system or build new pseudo disk files. When building new **AMD** {**A**lpha**M**icro**D**isk} files, the system uses 100% of the CPU time. Do not have the system booted under AMOS 8.x when generating the **AMD** disk files.

As mentioned in previous chapters, be sure to make at least one copy of the System Disk onto another **AMD** file, or copy the AMPC.AMD file to another hard disk drive. This action will provide an alternate boot disk for the Server. As shipped from Alpha Micro, the SUB.AMD disk file resides in the C: AMPC folder for this purpose. This **AMD** file is a one logical 32MB disk with just the AMOS 8.x Release. The SUB drive normally has the AMOS 8.x PIC code and DVD-PIC installed for the system SSD.

If for some reason the Server cannot boot from the current **AMD** file, you can re-define the "**DSK**" device. This is done in the {AMOS Disk} tab of the <AMPC Configure> program. Change the top first column entry from (DSK) to (SUB). Then change the next definition from (SUB) to (DSK). *Select*>

[OK] and then *Select*> File> [Restart] from the AMPC program. This will save the configuration from RAM to the hard drive. The Server will restart with the Alternate boot disk file as the **DSK** device and the Original DSK device as the SUB drive. You can then do disk maintenance on the SUB0: drive and check out the INI file and system files for errors. Correct any problems on the SUB0: drive. When you are satisfied with your changes, switch tasks from VTM1 to the <AMPC Configure> program and invert the identities of the DSK and SUB devices, *Select*>[OK] and [File> Restart], and the system should shutdown and reboot from the original DSK device. Remember that the alternate boot file or the AMPC.AMD disk file does not have to be in the C:\AMPC folder. It may reside on E:\AMPC or another disk drive or RAID subsystem installed on the Server.

An alternate way to do the same thing is invert the DSK and Sub devices and save the new configuration with the *Select*>[OK], (**ALT**)+(**Tab**) back to VTM1 and LOG OPR: execute a MONTST AMPC. This will shutdown the AMPC program, write to the system registry and restart AMOS 8.x without having to power down.

If the internal hard drive completely fails and you do not have another hard drive or RAID subsystem to boot from, then the AMPC Bootable Recovery CD is your only choice to restore the system to a bootable state. First, replace the bad drive with the same size or larger drive. Refer to the hardware service manual for the correct procedures to replace the defective drive. Then follow the Acronis™ restore procedure to load the AMPC 7.1 release back onto the replacement hard drive. After the Acronis restore finishes the system should boot up into the standard configuration that left Alpha Microsystems originally. If the System Administrator created an on-site Acronis backup of the C: SystemVolume with all the site-specific settings before a disk failure, then restore that Recovery CD to the new drive and reboot.

Disk Accounts

Theoretically, users could store their files on the disk without any type of organization. A list of all the files—the system software, special application programs, memos, everything—might be several pages long and would be a nightmare to decipher.

As discussed in Chapter 4, a better technique to organize your files is to create "accounts" in which to store as many files as you want. An account is just an arbitrary designation for a group of files. Your system software is already organized into various accounts, and you can add as many or as few additional ones as you need. The following paragraphs describe how to add accounts to your computer.

Passwords

The Administrator should assign passwords to any disk accounts. If the same account exists on multiple disks, each disk can have its own separate password for the account. The password acts as a mild security measure to prevent a casual user from accidentally logging into the wrong account. Passwords do not prevent files from being copied into or out of an account, and can be easily changed or erased using the SYSACT command described below.

Organizing the Disk

Because there is the possibility of logging into the wrong account if you have accounts with the same account numbers on different disks, please establish a different numbering scheme to prevent duplicates. AMOS 8.x operating system has reserved the accounts [1, *],[2,2],[7,*] and [10,1],[10,2] accounts on DSK0: Any application software can use any of the other account number possibilities, [11,*], [100, *],

[200, *] and so on. Most software applications have already organized themselves with proper account numbers.

If remembering account numbers is cumbersome, you can substitute a predefined "Ersatz" name for the account number. The ERSATZ.INI file is located on DSK0:[1,4], and contains several predefined ersatz names. The administrator can add more accounts to this file. For example, one of the predefined ersatz account names is OPR: for DSK0: [1,2]. So, whenever you need to log in the account DSK0: [1,2], you can type **`LOG OPR:`** ENTER instead. The *AMOS User's Guide* contains more information on ersatz names and how you can use them.

Adding New Accounts

There is no specific number of accounts the system must have as long as there is room on the disk. When the Server is brand new, the only accounts are the ones the system software has predefined. To add more accounts from time to time as applications are added, use the SYSACT command, following these steps:

1. To see a list of the disk devices on the AMOS 8.x Server, type;

   `SYSTAT` ENTER

   The end of the display lists the available disk devices. Decide which device to add the accounts to.

2. Log into account [1,2] on any disk device, for example, DSK0: Type;

   `LOG DSK0:[1,2]` ENTER

   If the user was not already logged into another account, enter your user name after the LOG command. If there's a password for this account, you'll be asked for it, too.

3. Type **`SYSACT`** followed by the name of the device to add the accounts to. For example:

   `SYSACT DSK1:` ENTER

4. SYSACT responds with its prompt symbol, an asterisk. To list all the program options, type:

   `*H` ENTER

5. The program options that can be performed are listed. To add a new account, type **A** and the account number to add and press ENTER. For example:

   `*A 100,5` ENTER

6. SYSACT responds: `Password:`
   SYSACT asks if a password is needed to protect the new account. Enter a password of up to six characters (A - Z, 0-9, $), or just press the ENTER key if no password is desired. If the account has a password assigned, whenever other users try to log into that account, they must type in the password. If the typed password is incorrect, they aren't allowed to log in.

7. To list all the account numbers on the disk device and their passwords, select the L (List) function: *****L ENTER

8. When finished using the SYSACT command, select the **E** (exit) option to return to AMOS command level. *****E ENTER

For complete information on using the SYSACT command, see the SYSACT reference sheet in the *System Commands Reference Manual*.

Using Virtual Terminals

You will find virtual terminals on the console very easy to use. Switching from one virtual terminal to any other is just like switching from one Window to another. As you switch from one virtual terminal to another, the processing continues for the task running on the virtual terminal you left.

As in any multi-tasking environment, be careful not to run conflicting tasks on multiple virtual terminals. For example, don't use one virtual terminal to run DSKANA on a disk while another virtual terminal is editing a file on that disk. You may damage the file and possibly many files.

MODIFYING THE SYSTEM INITIALIZATION FILE

The name of the system initialization file for the Eagle 760 Servers is usually AMPC.INI. This special file in account DSK0:[1,4] defines to the AMOS operating system all of the devices connected to the Server, the jobs that will run on the Server, and special programs, which need to be loaded into memory. As requirements change or as devices are added on the Server, you must modify the system initialization file.

NEVER change the system initialization file directly! Always make a copy of it and modify the copy, as described below.

To make a copy of the system initialization file to be modified and tested, execute the following commands.

LOG DSK0:[1,4] ENTER

COPY TEST.INI=AMPC.INI ENTER

VUE TEST.INI ENTER

Use AlphaVUE or XED to edit TEST.INI. If you are unfamiliar with AlphaVUE, refer to the *AlphaVUE User's Manual*. Make all the necessary changes to TEST.INI. Save the file when exiting AlphaVUE by pressing the ESC key and typing **F**. Some of the common changes you may want to make are discussed in the later sections that follow.

From OPR: use MONTST to insure TEST.INI is working as expected by typing:

MONTST AMPC,TEST.INI ENTER

After you have successfully tested TEST.INI and are satisfied with the results, copy it back to AMPC.INI and execute **MONTST AMPC**. This will resynchronize the AMOS and Windows copies of the AMPC.INI file.

Be careful not to copy the TEST.INI file too soon. You might want to let the Server run awhile to test out the new configuration. Then, if you decide you don't want to keep the new configuration, you can always reboot with the former system initialization file. Follow this procedure any time the system initialization file is modified.

Here is a sample simple initialization file:

```
:T                          ; a Simple AMPC.Ini file
JOBS 10
JOBALC VTM1,JOB1,LPT1
```

```
QUEUE 10000
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=15
TRMDEF TRM1,PCCOM=1:19200,AM65,200,200,200,EDITOR=15
TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
TRMDEF                      ; Required
VER                         ; Unlock keyboard
SCZDSP SCZPC.SYS      ; SCSI dispatcher
DEVTBL DSK
DEVTBL TRM,RES,MEM
DEVTBL /STR0                ; Streaming tape device
BITMAP DSK                  ; Paged bitmaps for AMOS 8.X
ERSATZ ERSATZ.INI/B:10      ; reserve 10 blank ersatz slots
MSGINI 50K
SYSTEM SYSMSG.USA
SYSTEM CMDLIN.SYS
SYSTEM SCNWLD.SYS
SYSTEM QFLOCK.SYS
SYSTEM TRM.DVR[1,6]
SYSTEM STR.DVR[1,6]
SYSTEM MEM.DVR[1,6]
SYSTEM RES.DVR[1,6]
SYSTEM UPD.DVR[1,6]         ; for UPDates
SYSTEM DVD.DVR[1,6]         ; for DVD-RAM drive
SYSTEM
SET DSKERR
MOUNT DSK:
SETJOB LPT1,DUMMY,20K, LPTINI LPT1.PIN;LPT1 Printer
WAIT LPT1
SETJOB JOB1,TRM1,500K,VER
MEMORY 0
```

CONFIGURING THE SYSTEM FOR PRINTERS

Defining the Parallel Port

Eagle 760 Servers contain one parallel port, which is not automatically defined for you. If you want to use the parallel port, make sure that the TRMDEF LPT1 definition is uncommented in the INI file. Verify that the LPT1 Generic printer is defined in the <AMPC Configure> Printers section.

Graphic Printers

This is only required if graphics is sent to the printer by AMOS, such as bitmap images. If this type of printing is NOT required, then skip down to the next section.

To set up an AMOS compatible graphics printer, do the following:

1. The printer must be added to Windows using the "Generic / Text Only" driver.
2. In the <Printers and Faxes> screen, after the printer is installed, right click on printer name and *Select*> [Properties].

3. *Select* > [Advanced] tab and verify that the {Driver} input box shows "Generic / Text Only". If not, *Select*> [down arrow button] or [New Driver] button to change the driver.
4. While on the <Advanced> tab, *Select*> [Print Processor] button.
5. The {Default data type:} dialog box should display **RAW**.
6. *Select*> [**OK**] to exit these dialog boxes. Then *click* on [**Apply**]
7. *Select*> [**OK**] to exit the <Properties> menu.
8. From the <AMPC System Diagnostics> window *Select*> [Configure]
9. *Select*> [Printers].
10. For the new printer ***Check*** the RAWMODE check box on the right side of the menu.

d

Using Windows Printers

Before AMOS can use the Windows printer, it must be fully installed and tested from the Windows side. If the printer will not work from Windows applications, it won't work from AMOS. To test the printer on the Windows side double *click* on any text file and *select {Print}* from the file menu to verify the printer produces output.

To configure AMOS to use a Windows printer, it must be defined in the {Printers tab} of the <AMPC Configure> (see Chapter 3). Once a Windows printer is mapped to the "LPTx" channel in the AMPC program, you then need to modify a TEST.INI file to define it to AMOS.

Please recognize the distinction between hardware LPT port vs. the AMOS LPT port assignment. This LPT does not have to be the same as the Server's parallel port, usually referenced as LPT1. Each LPTx can reference any Windows printer, even a network or USB printer. Because each AMOS LPTx configuration also includes the Windows fonts, the same Windows printer could have multiple LPTx references. For example, AMOS might be configured to use a network laser printer as LPT2 for Times Roman 10pt for letter printing and as LPT3 for Ariel 8pt for condensed printing and it could be the same physical printer.

For each Windows printer configured for AMOS, activate (or add) the appropriate TRMDEF in the line in the TEST.INI file:

```
TRMDEF LPT3,PCLPT=3,TELTYP,100,100,100
```

The "PCLPT=3" matches the LPT3 in the <AMPC Configure> {Printers} section. PCLPT=3 matches LPT3, etc. The name given on the TRMDEF line, such as "LPT3" above could be replaced with "LETTER" a name that identifies the function the printer is being used as.

Using Serial Printers

Each serial printer may be defined in either of two distinct ways:

1. As an Windows printer or
2. As an AMOS only serial printer. If it is defined as an AMOS serial printer, it will consume one AMOS users license.

To define it as a Windows serial printer, make sure the PC COM port is not mapped for AMOS use. This information is stored under the {Serial Ports} tab of the <AMPC Configure> program. (See Chapter 3).

As an AMOS only serial printer, the serial printer can be plugged into one of the AM-113 serial ports or into one of the PC COM ports, which are mapped for AMOS use.

In the AMPC.INI file, make the appropriate changes to the TRMDEF for that COM port to use the TELTYP terminal driver, and remove the EDITOR statement if present. Change the baud rate to one appropriate for the printer that will be used.

Adding a Printer

Additional LPTx ports {up to 16} can include Windows network printers or USB printers connected to the Eagle 760 Server. Remember to add the printer through the Windows <Control panel> {Printers and Faxes} option. The printer TRMDEF statements for PCLPT={1 to 20 octal} are valid. The PCLPT interface driver is embedded in the AMOS monitor; therefore you do not need to add a DEVTBL line, or a SYSTEM statement to load the printer driver. Verify that the <AMPC Configure> program has the LPTx device defined before modifying the TEST.INI file.

Setting Up The AMOS Spoolers

The print spooler is a background process that handles the transferring of print files to the printer. Print "jobs" can be queued to the spooler by applications or by the AMOS PRINT command. AMOS offers two types of print spoolers. For this example we will illustrate the original version, which is the memory-based spooler with a background job for each spooler. The job needs a dummy terminal to get the spooler started, followed later by the actual start up command:

Add in the following statements into the TEST.INI file in the appropriate area of the INI. Refer to the Simple Initialization above.

```
JOBALC spool2
TRMDEF LPT2, PCLPT=2,TELTYP,100,100,100
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
SETJOB spool2,DUMMY,20K, LPTINI  LETTER.PIN
WAIT  spool2
```

Change the DEVICE statement in the LETTER.PIN, **P**rinter **IN**itialization file to reference TRM:LPT2. For example:

```
DEVICE= TRM:LPT2
```

Other Windows network printers may be added - just use another number in the Printers tab of the <AMPC Configure> menu. For more information on printer initialization files and printer spoolers, refer to the AMOS Users Guide. For information on constructing cables to connect a printer, see Appendix A.

In addition to Windows network printing, AlphaTCP LPR network printers can be defined. AlphaTCP LPR network printers are the same as on any other AMOS system and are not covered in this section.

A large number of processes must work together for this printing to work correctly. These are tied together by logical names, link by link. Many installations use the same logical name for all of the links, thus reducing installation issues. An example of this is using the name "LPT2" for all of the links. Others use names that seem appropriate for that specific process, such as the printer model, application, location,

etc. Here we have used different names for each of these logical links so that you can better understand the interdependencies and troubleshoot any problems.

In the above example, the names in lower case are arbitrary, but must match other specific names. The "SPOOL2" must match a JOBALC statement. "DUMMY" in SETJOB must match "DUMMY" in the TRMDEF statement, and "LETTER.PIN" must be the name of the printer initialization file for this printer.

Before using a printer, create a (*.PIN) printer initialization file. This is the "LETTER.PIN" file referred to in the last line above. See your *AMOS System Operator's Guide* for a description of this file, which tells AMOS the characteristics of your printer.

Create the necessary printer initialization file (.PIN) using VUE. Here is a sample "LETTER.PIN" file:

```
DEVICE = TRM:LPT2
NAME = PRINT1
DEFAULT= FALSE
OPERATOR =JOB1
FORMFEED = TRUE
FORMS = NORMAL
BANNER = FALSE
HEADER = FALSE
LPP = 60
WIDTH = 80
```

The "DEVICE = TRM:LPT2" is the connection to the TRMDEF for the printer, either the Windows printer or a TRMDEF for a serial printer.

After booting the TEST.INI file with the spooler added, test the spooler installation with the command:

```
PRINT PRINT1=TEST.INI
```

ADDING JOBS

When the administrator increases the number of terminals connected to the Server, modifications to the system initialization file are needed to define what terminals are attached to which jobs.

The steps below are necessary to add an additional terminal to the Server. However, all the systems shipped from Alpha Micro have multiple INIs as examples to inform the administrator how to set up the system. Please refer to the Eagle 760 INI's in the appendix for more information.

Before adding jobs to the Server, check the number of jobs that remain on your AMOS license. To increase the AMOS user license, contact your VAR.

1. To add jobs to the Server, make a copy of the initialization file, as discussed previously.
2. At the beginning of the TEST.INI file is a JOBS statement. The number following the JOBS statement represents the total number of jobs on your computer.

   If your computer has 25 jobs now and you want to add two more jobs, change the number in the JOBS statement to 27 or more. For example:

```
JOBS 27
```

3. On the lines following the JOBS statement, there are one or more JOBALC statements. Each job can be defined in a separate JOBALC statement, or several jobs in the same JOBALC statement by separating the job names with commas. For example:

   ```
   JOBALC JOB4,JOB5,JOB6,JOB7
   ```

   Each job name—which can have up to six characters (A - Z, 0 - 9, $)—defines a job on the Server. The total number of jobs defined in the JOBALC statements must be equal to or less than the number in the JOBS statement above.

4. Define the terminals that will be attached to these jobs. The TRMDEF statement defines the terminal characteristics and tells the Server which port on the back panel it's connected to. Add any new TRMDEF statements after the last TRMDEF statement in the file.

   Here is a sample TRMDEF statement:

   ```
   TRMDEF TRM2, PCSIO=1:19200,AM62C,200,200,200,EDITOR=15
   ```

   Using this sample, here is the information about the terminal:

   - TRM2 is the terminal name. Use any name containing six or fewer letters and/or numbers. Each terminal must have a different name.
   - The next word is the “Interface Driver” (IDV), which has 4 different possible drivers, which can be used with AMOS 8.x.
   - PCVTM interface driver is used for Virtual terminals ports {1 to 10 octal}. This interface driver is embedded in the AMOS monitor.
   - PCCOM interface driver is used for PC COM ports {1 to 22 octal}. This interface driver is embedded in the AMOS monitor.
   - PCLPT has been discussed in the printer’s section above.
   - =1 is the octal number of the port the terminal is attached to. Each terminal must be connected to a unique port.
   - :19200 is the baud rate of the terminal.
   - AM62C is the name of the terminal driver. AM62C can be changed to different terminal drivers. Review the TDV’s in the DVR: account for others that may be used.
   - 200,200,200 are buffer sizes, expressed in number of characters. Different situations may require other buffer sizes, but for now just use 200,200,200.
   - EDITOR=15 enables the line editor with the ability to store 15 command lines for this terminal. See the *AMOS User's Guide* for more information on the line editor.

   For a more extensive explanation of what each of these items represents, see the *System Operator's Guide to the System Initialization Command File*.

5. Use the SETJOB statement to link the terminal defined in the TRMDEF statement with the job defined in the JOBALC statement. SETJOB statements include parameters to:
   - Define how much memory to allocate to a specific job
   - Define the specific disk and account the specific job will log into
   - Unlock the terminal’s keyboard (with the VER command)

   SETJOB statements must be entered after the last system statements in the INI file. Here is a sample:

```
SETJOB JOB4, TRM2,500K,LOG DEMO,VER
```

See the *System Operator's Guide to the System Initialization Command File* for information on SETJOB.

6. Only add a WAIT command for jobs that spawn additional tasks or daemons. The pertinent job types are the Print Spooler jobs, Task Manager, NETSER, VTSER, LOGGER, NETLOG and TCPEMU. The WAIT gives the operating system time to initialize the new job and process other commands in the SETJOB statement. For example:

```
WAIT SPOOL1
```

7. Three job types on an AMOS 8.x Server require better job servicing. They are TCPEMU, TELNED, and SMTPD. These jobs can have the job scheduling priority changed from 1 (the default for all jobs) to 2 (the recommended setting). At the end of the AMPC.INI file, after the TCPEMU job has been initialized, enter the following statements:

```
LOG OPR:          ;this process must be run from OPR
SLEEP 1           ;time for tcpemu to finish initializing
JOBLVL TCPEMU,2   ;set a higher job level
SLEEP 1           ;allow time for tcpemu to finish JobLvl
JOBLVL TELNED,2   ;set a higher job level
JOBLVL SMTPD,2    ;set a higher job level
LOG SYS:          ;back to sys:
```

The JOBLVL program must be run from the OPR: account. The SLEEP 1, gives time necessary for TCPEMU to login and change its job level before the TELNED job changes its job level.

8. After adding the SETJOB and WAIT statements, you are ready to perform a test reboot, using the procedure described earlier in this chapter.

Changing User Memory

How much of the Server's total available memory assigned to each job is determined by the memory parameters in the SETJOB statement (or the MEMORY command). If you decide to add jobs or alter memory allocations, first refer to the *System Operator's Guide*. Remember that assigning the total memory to AMOS is controlled by the {RAM size in MB} input box of the <AMPC Configure > program. See chapter 3 for this information.

To see a display of the current memory allocations on the Server, use the SYSTAT command:

```
SYSTAT/N ENTER
```

In addition to many other pieces of information about the status of the Server, SYSTAT shows how much memory is assigned to each job. The SYSTAT command is explained in detail in the *System Commands Reference Manual*.

To permanently change the amount of memory allocated to a job, modify the system initialization file per the instructions below.

1. Make a copy of the initialization file and edit it, as discussed previously.
2. Scan through the file until you find the SETJOB statement that attaches the terminal to the specific job whose memory you want to change. The amount of memory allocated to that job is one of the parameters in the SETJOB statement, immediately following the terminal name.

The number, normally in Kbytes, is reflected in the SETJOB statement following the terminal name, and is the amount of memory currently allocated to the job. This number can be increased or decreased as long as you keep in mind how much total memory the Server has, and how much memory the other jobs need.

3. The last statement in the system initialization file is MEMORY 0. This statement allocates to the System Operator's VTM1 job all the memory not specifically assigned to other jobs.

   If you want to increase the amount of memory assigned to the VTM1 job, the operator console, you need to subtract memory from the SMEM statement. The SMEM size is about 100MB or increases the {RAM size in MB} parameter in the <AMPC Configure> Menu.

4. Save the TEST.INI file and exit AlphaVUE. Then, perform a test reboot by running MONTST as described earlier in this chapter. You can then use the STAT or SYSTAT command to see how much memory is assigned to each job.

MODIFYING PRE-CONFIGURED NETWORK CONFIGURATION FILES

The Eagle 760 comes configured for network operation, but the network parameters must be modified for your specific network. Before booting a network-enabling configuration, make the following changes to the network configuration files contained in the TCP: account:

Depending upon your complete network configuration, other AMOS files may need to be updated, in addition to the files listed below. Please Consult the AMOS TCP documentation for additional details.

1. All AMOS 8.x Servers use the ETH101.NIN file to enable both AlphaNET and AlphaTCP to function. This is called out in the AMPC.INI file with the NETINI statement. The Ethernet driver is a simple packet driver called PCNDV.NDV. The following statement is incorporated into the AMPC.INI command file to configure your Ethernet hardware for all models of the AMOS 8.x Servers.

   ```
   NETINI ETH101.NIN
   ```

   The format of the ETH101.NIN is as follows:

   ```
   DRIVER=PCNDV  ;Network driver for all systems
   NETWORK=101
   GROUP=2
   NODE=100
   NODECOUNT=100
   GROUPCOUNT=20
   NODECHECK=ON
   NAME=AMPC SYSTEM
   ```

2. Use VUE to modify the **ETH101.NIN** to reflect your AlphaNET settings defining the Network, Group, and Node numbers. If you are not using AlphaNET, just leave the file as is.
3. In AMOS **`LOG TCP:`**
4. Using VUE, update the following files as indicated below:

a. **NETWRK.** Update the Ethernet entry to reflect your network IP address. This IP address must be distinct from the host Windows 7 IP address.

b. **CONFIG.** Update the route IP address at the end of the file to reflect your router IP address. If the AlphaNET network number was changed from **101** in the SYS:ETH101.NIN file, then make the same change to the **101** in the "ifconfig ec0 **101** arpa 100" line.

c. **MYNAME.** Update the entry to reflect your Internet domain name.

d. **RESOLV.** Update the desired default Internet domain and name Server (DNS) entries to your particular configuration. If the HOSTS file is being used, then remove the "#" from the " #tryhostfile" line. If you are not using DNS, leave the # in place.

e. **FTPUSR.** Change the pre-configured user names and passwords for FTP access.

f. **HOSTS.** Change the hostname information to reflect your particular installation. You do not need the HOSTS. File if you are using just DNS. The original file is provided as an example.

g. **TIMZON.** Adjust the parameters for your local time zone.

5. Log to SYS: and VUE the **ETH101.ERZ** file. Add any ersatz names for your installation.
6. If your INI file currently does not enable the network, we recommend you use the AMPC.INI or a modified version of AMPC.INI as the TEST.INI.
7. Use MONTST AMPC, TEST.INI to shut down the system and then reboot to test the network-enabling .INI file.

AMOS DISK MAINTENANCE

Analyzing the Disk

A disk diagnostic program reads data from a disk. If the Server cannot read an area of the disk, it reports the problem. Checking the disks frequently with disk diagnostic programs helps prevent data loss—the sooner you catch a malfunction, the less data is likely to be affected. The type of problem found by disk diagnostics is known as a "hard error," because it means data is lost. A "soft error" means the Server had trouble reading the data, but data was not lost. Disk diagnostics do not report soft errors.

If a diagnostic program indicates problems, you may need to restore data from a backup copy or reconstruct the data on a damaged disk. If you have this type of problem, consult the section "Recovering From Disk Errors" in the *System Operator's Guide*.

Before running any of the disk diagnostic tests, especially if you suspect a problem, it is a good idea to use the SET DSKERR command:

SET DSKERR ENTER

SET DSKERR causes the Server to report the location of any hard errors the diagnostic program finds. If you don't use SET DSKERR, the diagnostic tells you only that an error occurred, not where on the disk it happened. You must run the diagnostic program from the same job where the SET DSKERR was executed.

The next two sections discuss two very useful diagnostic programs, REDALL and DSKANA. You can find more information on disk diagnostic programs in the *System Operator's Guide* and the *AMOS User's Guide*.

The REDALL Command

REDALL reads every block of data—or the number of blocks you choose—on the logical disk specified, and reports any hard errors. It does not alter the data on the disk.

REDALL works on all disks. It is a good idea to run REDALL for each disk on the Server occasionally, possibly once a month.

To use REDALL, perform these steps:

1. To read all the blocks on a disk, enter REDALL followed by the device name of the disk desired.

   ```
   REDALL DSK2: ENTER
   ```

2. If you don't want REDALL to read all blocks on the disk, follow the disk specification with the decimal number of blocks you want read:

   ```
   REDALL DSK2:100  ENTER
   ```

   The command above tells REDALL to read the first 100 blocks on DSK2:

3. REDALL now tells you the number of blocks it is reading. For example:

   ```
   REDALL DSK2: ENTER
   Reading 13800 blocks
   EXIT
   ```

4. REDALL ends when it finishes reading the blocks. If any errors occur, REDALL displays the appropriate error message on your screen.

The DSKANA Command

The DSKANA command is an important part of your disk maintenance routine. DSKANA analyzes the data on a specified logical disk and reports lost and mis-linked disk blocks, inconsistent block counts, and other file errors.

Each file on the disk is stored in one or more disk blocks. AMOS keeps track of which disk blocks are currently used in files and which are not, by means of a special structure called a "bitmap." Each disk has its own bitmap.

DSKANA compares the information in the bitmap with the actual data on the disk to make sure the bitmap is accurate. For example, if DSKANA finds a disk block that is part of a file, but the bitmap shows the block not in use, DSKANA reports an error. When DSKANA finishes analyzing the disk, it rewrites the bitmap unless you tell it not to.

Use DSKANA frequently on all of the Server’s disks. It is a good practice to use DSKANA on every disk just before performing a disk back up to tape.

For more information on DSKANA, see the *System Commands Reference Manual*.

NEVER use DSKANA (unless using the /C option described below) while other users is accessing the specified disk; doing so may damage the bitmap and the files on the disk.

To use DSKANA, follow these steps:

1. Log into OPR: by typing:

   LOG OPR: ENTER

2. Type **DSKANA** followed by the device name of the disk you want to analyze. For example, to analyze DSK1: type:

   DSKANA DSK1: ENTER

   As DSKANA checks the disk, it displays the disk account numbers. When it finishes, it displays the results of its analysis. For example:

```
DSKANA DSK1: ENTER
[Begin analysis of DSK1:]
[1,2]
 .
[100,20]
[The following blocks were marked in use but not in a file]
  1767   1772   2562   3456   6265
[The following blocks were in a file but not marked in use]
[Rewriting BITMAP]
No file errors
```

If you see the "No file errors" message, the file structure on the disk is intact. If DSKANA lists a number of file errors, there is a problem with the disk's file structure. Your next step is to run DSKANA again, using either the /L or /E option—discussed below—to see where the errors are on the disk.

For the complete procedure to follow if DSKANA finds any file errors, see "Recovering From Disk Errors" in the *System Operator's Guide*.

DSKANA Options

Following are the most common DSKANA options. Please see the DSKANA reference sheet in the *System Commands Reference Manual* for a complete listing of options.

Option	Function
None	Displays account numbers on disk and summary only.
/C	Check the Bitmap, but does not rewrite bitmap.
/E	Lists files and blocks in which any errors occurred.
/L	Lists all files and blocks on the disk.

To use one of these options, place it after the DSKANA command like this:

DSKANA DSK1:/C ENTER

As mentioned above, use the /L or /E option to find the location of any file errors DSKANA detects. The /C option is discussed in the next section. To see the list of DSKANA options, type **DSKANA** ENTER without specifying a device name.

The CHECK Option and Automatic Backups

At times, use DSKANA to examine a disk without re-writing the bitmap, especially when using an "automatic" backup method such as a command file or the Task Manager to perform the backup.

The reason for this is simple: assume you run DSKANA at night as part of an automatic backup procedure. If anyone on the Server leaves a file open —such as an AlphaVUE or AlphaWRITE document—on the device DSKANA is checking, DSKANA doesn't take the open file into account when it rewrites the bitmap for the device. When the person returns in the morning and writes the file to the disk, it causes a bitmap error, because the Server didn't know the file was open. This process could corrupt the disk causing data loss.

To run DSKANA without rewriting the bitmap, use the /C option switch. You see DSKANA's normal display when you use the /C option, except for the [`Rewriting BITMAP`] message.

AMOS Formatted SCSI Drives ONLY

When installing a new AMOS formatted hard drive, follow these steps:

1. Power down the system and install the drive onto the appropriate disk interface channel.
2. Power up the system and verify that the new drive is detected during the Adaptec device scan.
3. Allow the system to boot.
4. *Select* > {Configure} menu of the <AMPC program> then *Select* > {SCSI devices} tab.
5. Map the new SCSI Disk drive at an unused AMOS SCSI ID. This is done by a *select, drag and drop technique* from the upper panel to the lower panel as described in Chapter 3.
6. *Select*>[OK] and then File>{Exit} to write the system registry.
7. Reboot the Eagle 760 system and log to the OPR: account.
8. Use the FMTS2 command from the OPR: account to format the drive in AMOS format.
9. Select either Traditional or Extended format. Exit FMTS2. Please refer to the *System Commands Reference Manual* for instructions on FMTS2.
10. Log DVR: and execute FIXLOG and use SCZPC.DVR as the input driver. Input the mapped SCSI ID and the number of logicals. Select a new driver name.
11. Save the new driver to the disk in the DVR: account.
12. Log SYS: and edit the TEST.INI file.
13. For the new device, add DEVTBL, BITMAP, SYSTEM and MOUNT statement to the INI.
14. If the SCSI drive will be a permanent device, Add SYSTEM DCACHE.SYS/N/M/U xxxK to allocate a read ahead cache buffer. Write caching is not allowed or supported under AMOS 8.x systems.
15. Add a SET NOCACHE statement for all accessed **AMD** disk devices. This will improve performance of the Server.
16. Log OPR: and COPY or MTURES data to the new disk drive.

Be extremely careful when using the FMTS2 command. ***Formatting a hard drive will delete all data and system files!*** It is important that only a knowledgeable technician perform these tasks.

BACKING UP THE SERVER DATA

Once the Server is in use, you will soon find yourself operating it with confidence and ease. However, no matter how smoothly everything goes, please remember one important thing—you must keep current copies of the data contained on the Server! This copy is your "backup." Computers and data storage devices are very reliable, but no one can guard against an unforeseen occurrence like a power outage, fire, or hardware malfunction. Such disaster can happen to anyone.

Your data is probably one of your most valuable possessions. How long would it take to re-enter the entire company payroll, all of your accounts receivable invoices, or your inventory, if they were lost? What if you could not reconstruct the information no matter how much time you had?

All Alpha Micro Servers come with some type of data backup device. Whether your backup device is a streaming tape, DVD-RAM device, learn to use it! ***Develop regular backup procedures and follow them!*** If disaster strikes, you'll be glad you had a little foresight.

The administrator should back up some or all of the data on the Server at regular intervals. How often to back up depends on how often data is added or changed. If data is added every day, you should back up the Server each night. Month-end and Year-end backups also make sense. Because both backup and diagnostic procedures usually must be done when only one job is accessing the disks, it is wise to run them when other users are logged off the Server at night or on weekends.

With the Task Manager, or the SLEEPR command within a command file, you can run tape backups in the middle of the night when they won't interfere with other users. See the *Task Manager User's Manual* for details on how to do this.

Backup Data Types

There are three types of DATA BACKUPS with different data structures.

- AMOS Data
- Windows 7 Data
- Acronis True Image Data

These data types are not interchangeable. Each backup data type must be used with the program environment in which it was created. Following is an explanation of these types and the programs that created them in more detail.

AMOS Only Data Backups

There are three different programs that can create a data backup, and two programs that can restore the data from the backup.

- COPY to backup and restore
- MTUSAV to backup, use MTURES to restore
- MAKDVD to backup, DVD to mount, and COPY to restore

COPY

When AMOS is booted, the COPY program will move data to other disk drives, which can be AMOS formatted drives or **AMD** pseudo disk drives on hard drives or DVD-RAM media. The data format between these data storage media is the same, and therefore compatible. Moving the data to other drives gives you a backup, but not necessarily on another media type. Copy can restore data to the original location from a backup disk. If you mount a DVD-RAM media created with MAKDVD using the DVD program, the data on this media type can easily be restored back to the your working disk drive.

MTUSAV

When AMOS is booted, you can move disk data to another media type like a "Tape cartridge" using the MTUSAV program. This will backup to Streamer and DAT tapes. The MTURES program will restore the data tapes to a disk drive. The tape format is AMOS MTUSAV format and is only readable by MTUSAV, MTUDIR and MTURES no other program can read this data structure. With MTURES, restoring data to different AMOS systems is a standard way of interchange that is quick and easy. The MTURES and MTUSAV programs cannot restore or backup data in the Windows environment directly.

MAKDVD

Within AMOS, the MAKDVD program can create logical disk backups to a DVD-RAM media in the exact AMOS disk data structure it came from. The DVD program can mount the media as a new disk drive type called DVDx: drives. The DVD drives are images of the disks they were created from. If created on a DVD-RAM media, an individual file could be updated with a COPY command. To restore data from the DVD drive, COPY is used to move the backup data to the original location or to a different disk at the discretion of the operator. Media written in this format cannot be read from the Windows environment.

If the administrator has backed up to a particular DVD-RAM media more that 25 times, you may get a SCSI error code 1. If this happens the physical media has a data error. Remember that the media has a limited life but you may be able to reclaim the media by performing a "Full Format" from the Windows side on the failing media. This takes at least 45 minutes. Use the Explorer application and right click on the DVD drive and select the format utility and use UDF 2.0 format. Once your finished with this process switch back to AMOS and execute the MAKDVD and do your backup. Then verify that the media wrote completely.

WINDOWS Data Types

The Windows data types are numerous but we will discuss only those listed below. There are many Windows programs that can access these data types. AMOS currently cannot access these data formats directly.

- NTFS data format
- FAT32 data format
- UDF CD formats
- CDFS

NTFS Data

Most hard disks, RAID subsystems, and USB disk drives can be formatted in NTFS. The Windows system can read and write to these drive types with this data format. Backup data files can be written to the disk of choice. AMOS cannot read or write to NTFS drives directly, only through **AMD** disk files. Since the **AMD** disk files reside on an NTFS disk, the **AMD** file can be copied to any data type accessible by Windows. The **AMD** disk file is an image backup of the AMOS data and programs. The image disk files can be copied to any logical drive on the Windows side. AMOS can copy files between the AMOS and Windows environments with TODOS and FMDOS programs.

FAT32 Data

Hard disks, DVD-RAM and USB hard drives can all be formatted in this data type. Any file in the Windows environment can be written to the media formatted in this data type. **AMD** disks files stored under this format are a complete image of the AMOS disk and can be copied to media formatted in other data formats by Windows only. AMOS can only access **AMD** files and cannot access files on the Windows environment directly.

UDF CD Data Format

Universal Disk Format, UDF 1.5 and 2.0, are CD formats which are used by other 3rd party programs to copy files to DVD media. These are only accessible by Windows programs and not by AMOS directly. **AMD** disk files can be saved in this data format as a backup.

CDFS

CDFS, Compact Disk File System, is accessible under Windows and DOS. Other 3rd party application programs may write the Image backups in CDFS format. Other applications programs can read this CD format.

Acronis True Image Data

As the name implies, a complete disk volume image is compressed into a TIB file extent of any size. The image can span multiple DVD-R media or be stored on any hard drive, other than the one being backed up. The Acronis True Image backups are only readable by the Acronis Backup and Restore utility or the Acronis Explorer. The Acronis Explorer can open and read the TIB file, displaying the files compressed inside. The data backed up are Windows programs, AMOS programs and **AMD** disk files. The operator can then select any file inside the Image and restore it to any location controlled by the Windows operating system. The files cannot be restored to the AMOS operating environment directly. The **AMD** disk files inside the TIB file can be restored but only to an NTFS, UDF or FAT32 formatted disks.

One way to restore the data is to install a formatted DVD-RAM media into the DVD-RAM drive. Using the Acronis Explorer, restore the **AMD** file to DVD-RAM media as long as the selected **AMD** file size is less than 4.2 gigabytes. Then the operator must define the **AMD** file as another AMOS disk device. Modify the TEST.INI and boot the new configuration. Data from the backup is accessible to AMOS, once the disk is mounted.

Any **AMD** disk file of any size can be restored to any internal hard drive or USB hard drive that has space available. Then the same procedure of modifying the AMOS configuration and INI files is used.

Reboot AMOS with the backup disk defined. Then mount the device and access the backup as a different disk device.

The Acronis True Image backup is the only backup type that will backup and restore complete disk volumes from both environments in one pass. This is a compressed data backup of the disk volume. When writing to a “File” the backup must be stored on a different logical hard drive than the logical selected for backup. Alpha Microsystems ships the Server with a “File Image Backup” stored on the E: DataVolume as a backup of the Windows/AMOS C: BootVolume. The system administrator can create data volume backups with Acronis onto disk drives or DVD media.

Windows programs and files can be extracted from the Acronis True Image, but only files that are not open and in use by the Windows operating system.

Backup Media Types

The following different backup media types are available on the new AMOS Servers.

- Streamer tape
- DAT tape
- DVD-R, +RW
- DVD-RAM
- RAID Level 1
- RAID Level 5
- USB Disk
- Network File Server

Streamer tapes are the most commonly used backup media. The tape backup is used for incremental and full disk backups of the AMOS Server data. There are multiple backup densities for the tapes. The new tape drives perform very well and have capacities up to 100GB. Most installations use tape for daily backups for the Server data and programs. There are 20/40GB, 60GB and 100GB drives available mainly for the Eagle 760 Server. The older 4/8GB drives are popular for both Eagle 760 and 800 Servers.

DAT tape drives are quickly disappearing. These older DAT drives from your old system will work on the new Servers but are slower and have a single ended interface limiting the data transfer rate. These devices do work if you follow the SCSI configuration rules and map the tape drive to an AMOS SCSI ID. The typical tape holds about 2 to 4 GB of data. Again these tapes are used for daily incremental backups or contain archived data.

DVD-R media is use as Backup media. Normally this media is used during a Acronis True Image Backup of the Server. The Server does not need to shutdown AMOS for Acronis to make the image backup of the selected logical disk. The DVD-R media holds about 6GB of compressed disk data. If your Server has more data than this, you must feed the DVD drive with more DVD-R media. This is a long procedure to backup a complete Server. This media is write once, read many.

DVD+RW media is new to AMOS systems. This media can be used for both Read and Write operations from Windows. The +RW media can also be used on the Windows side for data backups from the <Explorer> Application. The packet writing software allows you to drag and drop files onto the media if it has been formatted in UDF. The DVD+RW speed is not fast; this takes a lot more time than with DVD-RAM or DVD-R media. This media type does not work with Acronis or MAKDVD.

DVD-RAM media is not totally new to AMOS systems. This media can be used for both Read and Write operations. The media can be used on the Windows side or with AMOS, but not both on the same media. The MAKDVD software gives the greatest flexibility to backup procedures. It is faster to search and retrieve data files, faster than a tape restore. Please refer to the MAKDVD documentation for more information. The DVD-RAM media may be formatted in Fat32 or UDF and used as an alternate disk drive for Windows storage. This media has a longer life than all other media type described but still has a limited life. DVD-RAM media formatted in UDF is useable with AMOS to store **AMD** files and is faster to update than the MAKDVD format.

RAID Level 1 is an on-line mirrored backup of the system data. Normally the 160GB drive system has two physical 160GB drives installed. The second drive is a Mirror copy of the first. Alpha Microsystems can provide a SCSI 160 RAID system for the Eagle 760 Systems. The drive trays can be removed and another hard drive of like size installed. Once installed the Level 1 RAID controller does the rest to mirror the first drive in the system. This gives the administrator a hard disk backup of whole system {Windows and AMOS}. A 160GB drive takes 5 hours to mirror and slows down the operating disk response if booted from the RAID by 30% during the rebuild process. Once finished with the mirror task the speed penalty disappears. The SATA RAID 1 system can also be used as a backup device to internal SCSI drives on the Eagle 760 system. This device can also be made the alternate boot device. There is no down time with RAID Level 1 and no system restarts other than Administrative functions.

RAID Level 5 has redundancy built in to provide data security. There are hot spares available to RAID level 5 subsystems. These subsystems are normally quite large depending on the disk drives used. The newer RAID systems can use up to 200GB disk drives. The whole disk subsystem would then be partitioned into logical drives under Windows and formatted in NTFS file system. Then whole logicals could be used for online backups of the Server data. Even with this redundancy, you should still backup the RAID to Streamer tape. The RAID unit, which Alpha Microsystems provides, has a SCSI 160 interface and is normally installed on AM8000 Servers. This unit is available in 3,4,5,6, 8-drive configurations.

A USB Disk is also new to AMOS systems. These drives can be plugged into the spare USB 2.0 port on the system and are recognized by Windows as a removable volume. Data files can be moved from the active internal drives to the USB drives. Using USB disk is slower than internal drive because the data is converted into a serial stream. This option is faster than using DVD-RAM media with a copy. The USB drive can be used from AMOS as a backup **AMD** device. The **AMD** disk file is even bootable.

The slowest alternative to data backup is moving files via peer to peer networking to a network file Server. The process also requires AMOS to be shutdown to allow the **AMD** disk files to be copied to the file Server.

Formatting and Initializing DVD-RAM Media

There are 3 ways DVD-RAM media can be used on the AMOS 8.x Servers.

1. Using the media from the Windows side with FAT32 or UDF.
2. Use MAKDVD to create DVDx: backup logicals from AMOS.
3. Use MAKBD from AMOS to create a backup of the just used blocks of each logical.

The WINDOWS Side:

Before using a new DVD-RAM media for the first time, it must be formatted. To use the DVD-RAM media only from the Windows environment, format the media as FAT32 or UDF so that the Windows OS and programs may access it. Some media vendors format the DVD-RAM media in UDF 1.5 format. To format media in FAT32 format follow the steps below to initialize a DVD-RAM media. The System Administrator must perform this function on the main system console.

These steps erase any data already on the media! Make sure the media does not contain files you need before formatting.

The Administrator can access the correct tool by selecting in the <AMPC System diagnostic> window, *Select*> Tools> {Control Panel}.

By using the <Control Panel> with the mouse, *Select*> [Folders], find the DVD device in the left panel and *right click* on it. Next, from the popup menu, *Select*>{**FORMAT}**, *Select*> **FAT32** format type and a name for this volume like "(**DVD-RAM1)**" and *Select*>[**OK**]. The Windows utility will format the media in FAT32 so it can be accessed from the Windows side. Once formatted, *right click* on the D:\DVD-RAM1 media and *create* an AMPC folder.

This media format allow the system administrator to copy files directly to a Folder on the DVD-RAM media.

For example, from the <Explorer> application, *Select* the {AMPC} folder and *right click*, *Select*> {Copy}. Move the mouse to the {D:} drive, (the DVD-RAM media), and *Right click* and *Select>{Paste*}. The whole folder will copy to the DVD-RAM media. Be patient, this can take up to 2 hours if the Folder has 4GB of data.

AMOS and MAKDVD:

The MAKDVD program copies complete logical AMOS disk drives onto the DVD media in a format that is compatible with the DVD program. A DVD media can contain approximately 4.7 gigabytes of data. MAKDVD program will copy AMOS files and the directory structure to the DVD-RAM media. This software package is our first choice to be used under AMOS 8.x. A big advantage with the MAKDVD software is different sized disk platters can be written to the DVD-RAM media in the same pass. So if the DSK0: to DSK5: platters are 80MB and SUB0: is 32MB, all these platters can be written in one pass. The only disadvantage in this example is the resulting DVD6: is padded with nulls to equal 80MB in size. The last logical for the original 32MB disk is only readable, not re-writeable, with the DVD program. A SYSTAT will show that DVD6 is Bitmap Kaput because of the padded nulls.

The backup can contain one or many disk platters up to the media capacity of 4.7GB. DVD-RAM media is used as the backup media using the MAKDVD program. Label your disk platters with a description of the device and data contained. This label description is written to the DVD media along with the full disk logical being backed up. The MAKDVD formats and writes the data in one pass. This process will extend the life of the media longer than using FMTDVD and COPY.

Another advantage is AMOS does not have to be shut down to access the backup media. The DVD-RAM backup is mountable under AMOS with the DVD program. Once the DVD media is mounted, individual files may be copied to or from the DVD RAM media just like any hard disk drive, just slower on the

write to RAM media. Using the DVD is faster to restore individual files or [p,pn]'s than a streamer tape. To change the media, execute (**DVD/U)** (**Enter**), first to un-mount the current DVD media, then install the next AMOS formatted media into the DVD drive. Allow about 30-40 seconds for the drive to recognize the media and then type:

DVD ENTER

The new media will be mounted and can have different logicals. The disk labels of the original hard drive platters will be displayed. The DVD command will add DEVTBL entries and load the BITMAP for each of the new logicals during the mount. See the system command reference sheets for more details on these programs.

AMOS and FMTDVD:

FMTDVD will format the DVD-RAM media into as many logical devices of the same size that you require. After the format is complete, mount the media with the DVD program. Copy files from any disk logical to any of the newly defined DVD logicals. The disk labels are not written with the copy. The LABEL program must be used to label each logical. This must be done manually or through a command file. The copy to the DVD disk logicals is slower than using MAKDVD and will wear out the media faster than MAKDVD. The excessive media wear is due to the fact that the BITMAP must be updated for each file copied. The DVD-RAM media is lifetime is 100,000 read-write cycles. The DVD-RW and CD-RW media lifetime is 1000 read-write cycles. There is no write caching available for this process, so it is slower writing data to the media than having **AMD** files stored on the media formatted in UDF. MAKDVD can create a six logical 32MB disk in about 15 minutes. If you use the FMTDVD / COPY method may take 12 hours for the same task. We strongly recommend not to use FMTDVD/Copy method.

We do not encourage using DVD+RW media for this process because it is only a 2X write speed device. DVD-RAM is 3X write speed.

TYPES OF BACKUPS NEEDED

There are two types of backups needed for every system. They are:

- Windows System Backup
- AMOS Data Backup

WINDOWS System Backup

The Windows System backup should contain all the Windows software and the AMPC folder with all its contents. This backup should contain all the system settings contained in the Windows Registry. The best way to make sure you have this backed up is to create a Acronis True Image backup of the C: BootVolume drive. This one backup will restore your system exactly the way it is setup now and working.

AMOS Data Backup

An additional image backup of the E: DataVolume with the current **AMD** disk files is also important. The **AMD** files must be backed up. The **AMD** files contain the programs and customer data running on

the Server. This data backup can be a Acronis backup or Network or Disk backup of just **AMD** files. Another option is a Streamer tape backup of the AMOS programs and data files inside of **AMD** files. The System Administrator needs to make the decision as to the media and backup data type that will be used for this important portion of the Server's data.

Backup Considerations

MTUSAV style backups are fully supported on AMOS 8.x Servers. Older tapes written on previous AMOS systems are readable with AMOS 8.x. The newer tape drives are faster than on earlier systems. To significantly reduce the backup time, consider the following, which may influence the disk configuration you select.

- An AMOS **AMD** disk over about 6GB may not be compressible with Acronis True Image onto a single 4GB DVD, unless you only select a File backup instead of a partition backup. So for larger AMPC.AMD disks, the 20/40GB (or larger) AM-65X streamer is recommended. The AM-65x drives are considerably faster than the 4/8GB AM-629 streamer. All SCSI-2 streamers work on the Eagle 760 installed on Channel B.

- Another choice is to split the E: drive into two independent NTFS partitions. Place an AMOS.AMD disk on each partition. Then regularly use one to quickly backup the other (about 12 minutes). For off-site backup, the raw backup partition can usually be compressed with Acronis onto a 4GB DVD. To recover a single AMOS file from the DVD, the whole **AMD** file would be restored, defined the AMD disk file to the system, mount the disk file and then the individual AMOS files can be accessed.

- Some administrators may want to add a USB removable hard disk drive. The administrator can copy the **AMD** file(s) to that drive. The USB drive can then be removed from the system for off-site storage and replaced with another drive for the next backup. The initial copy of the **AMD** file is slow but if you mount the **AMD** disk file from AMOS you may not be able to tell the difference in access speed, with USB 2.0 interface. Please do not use USB 1.1 devices because the transfers speed is to slow. Writes are slower than reads under USB 2.0. The Windows disk caching helps access time. Remember to execute a Shutdown of the system to flush the disk caches. Use the new XMOUNT utility program to mount removable storage.

- The USB hard drive choice is best choice for full partition backups with Acronis True Image.

- Use the new MAKDVD program to backup specific disk logicals or complete sets of DSK devices. Remember not to allocate a disk logical larger than the DVD-RAM media can hold. Limit your disk logical size to 4GB and under.

Are the Older AMOS DVD-RAM Backups Compatible?

AMOS DVD-RAMs, as well as CDs made on older AMOS systems are readable on the Eagle 760. However, DVD-RAMs and similar media written on the Windows side with the **AMD** files are NOT readable on older AMOS systems.

The new version of MAKDVD will work on all models of the AMOS 8.x Servers, which have a DVD-RAM drive. The new MAKDVD provides a better more flexible backup utility. It allows different size "AMOS drives" on the same DVD media. In addition, DVD-R media can be used to create more permanent backups.

Unmountable and Mountable AMD Files

With the Version 936d and later of the AMPC.EXE program, along with the XMOUNT.LIT version 8.0(100), AMOS 8.x has the ability to un-mount and mount **AMD** disk files. This results in a whole new way of using **AMD** disk files. Except for the **DSK** device, the other subsystem disk files can be mounted and un-mounted without shutting down AMOS. This process can provide a way to have on line backups without shutting down AMOS to change the disk configuration. To provide this capability follow this procedure.

1. Define the subsystem name and file-name in the {AMOS Disk} tab of the Configuration program. For example : **UPD E:\AMPC\UPDATE.AMD**
   {The **AMD** file must be on a hard drive or DVD-RAM media.}
2. Save the Configuration with the [OK] button.
3. Modify the AMPC.INI and only define the disk subsystem driver, for example:
   SYSTEM UPD.DVR[1,6]
   Do not define the DEVTBL or BITMAP statements in the INI. Allocate SMEM for the Bitmaps so that they will XMOUNT correctly. Start at 20 MB and add more if any other **AMD** files will be used. The amount of SMEM required is proportional to the bitmap size of the **AMD** file being mounted. Save the INI file.
4. Log DVR: and **COPY UPD.DVR=PCDSK.DVR** if it does not already exists.
5. Log OPR: and MONTST the new INI and boot the system normally.
6. From AMOS, execute XMOUNT Dev: for example: **XMOUNT UPD:** ENTER
7. The system will respond with how many logicals the **AMD** disk file contains.
8. Execute MOUNT DEV: for example: **MOUNT UPD:** ENTER
   You can use the new **XMNT** *dev:* command to accomplish step 6 & 8 in one step.
9. The system will respond by mounting the UPD device with as many logical drives as the **AMD** disk file contains.
10. To un-mount the UPD disks, in our example type: **XMOUNT UPD:/U** ENTER

This technique can even be used interactively by changing the Disk filename to another name on a different logical and exit the Configure screen. Then execute XMOUNT UPD: followed by the MOUNT UPD: command. This will mount the new **AMD** disk file.

How this works is a lot like DVD-RAM and the DVD.LIT program. When XMOUNT is executed, the UPD device gets DEVTBL and BITMAP entries in the system. When MOUNT is executed, it will load the bitmap and displays the new disk labels. The drives are then used just like the standard method. **AMD** disk files on removable USB hard disks can then be mounted or un-mounted to provide large data storage. Once the drive is un-mounted (XMOUNT Dev:/U), it can then be removed from the system.

This technique does not allow the **AMD** disk files to be stored on a DVD-R media. Only internal hard drives, USB drives and DVD-RAM media that are re-writeable are allowed to store **AMD** disk files that can be accessed.

In AMOS, copying files to the new UPDx: disk device is faster than copying files to an already created DVDx: disk. Creating a backup with the MAKDVD program is still the fastest full disk backup. The time it takes to create the initial **AMD** file on the backup hard disk is still the same. The reason why the UPDx: disks can be updated quicker is that Windows write caching is helping to write to the **AMD** disk device. Updating the DVDx: disks are slower because there is no write caching to help out.

DVD Software Revisions

The DVD software and device drives have been updated to function under AMOS 8.x. Find the Command Reference sheets for the DVD programs and follow their directions on how to use the DVD programs. The minimum working versions are listed below:

```
Program       PPN      Version or Hash   ;Comments
DVD.LIT      [1,4]     8.0(101)-3        ;updated Jan2011
DVD.DEV      [1,4]     new devices added
DVD000.NEW   [1,4]     8.0(101)          ;updated for Eagle 760 systems
FMTDVD.LIT   [1,4]     8.0(102)
MAKDVD.LIT   [1,4]     8.0(101)-6        ; updated
DVDRES.LIT   [1,4]     8.0(101)-7        ; new restore program
DVDRAM.DVR   [1,6]     755-711-243-654   ;for all units except Panasonic
DVDPAN.DVR   [1,6]     151-436-033-442   ;Only the Panasonic LFD-521U
```

To install the both drivers for both models of DVD drives do the following:

LOG DVR: ENTER
COPY DVD.DVR= DVDRAM.DVR ENTER ; for all units except Panasonic or
COPY PAN.DVR= DVDPAN.DVR ENTER ; for the Panasonic LFD-521u
LOG SYS: ENTER

To check if the PIC code is installed type:
DVD/PIC ENTER

The system should display the PIC if installed. If the system response is ”Invalid SSD”, do the following from the SYS: account.
Log SYS: ENTER
COPY DVD000.OVR =DVD000.New ENTER

Then enter the PIC code by typing.
DVD ENTER

Enter the DVD PIC provided by Alpha Micro. Verify that the DVD.DVR is loaded into system memory. If not, VUE the AMPC.INI and add in the drives to system memory.
SYSTEM DVR:DVD.DVR

Finish out and save the file. Test the new file.

Log OPR: ENTER
MONTST AMPC ENTER

The system should boot up and reach MEMORY 0. Place a DVD-RAM media in the drive and test the DVD device by typing:

DVD ENTER or **DVD /DEV: PAN:** as appropriate

To create a quick backup to the DVD-RAM, LOG OPR: and execute MAKDVD. Enter the device specification for the disk platters to be written, then (Enter). The MAKDVD program will write the data to the media and give a progress report on the % written. When done, it exits to the AMOS dot.
To mount the new backup type:

DVD ENTER

The system will respond by mounting the DVD-RAM media and display the disk labels read from the media.

WINDOWS ADMINISTRATION

There are a few procedures that the System Administrator must set up for an installation. These have to do with Network setup, Disk setup. These and others are normally controlled through the <Control Panel> program. The Windows system has its own IP address and AMOS 8.x has its own unique IP. If your installation has a DHCP Server, the Windows system will obtain its IP from the DHCP Server. This is the Eagle 760 Server "Default" as shipped from Alpha Micro.

The System Control Panel

To access the Windows system, go to <Control Panel> *Select*>{Tools} item from the <AMPC System Diagnostics> window. This is shown in figure 6-1.

This one window has the greatest power and largest options to control the Eagle 760 Servers settings. If you are familiar with XP Professional, this will be very easy to understand. All the settings are already pre-set for the System Administrator by Alpha Microsystems. Normally, you do not need to change any of these settings.

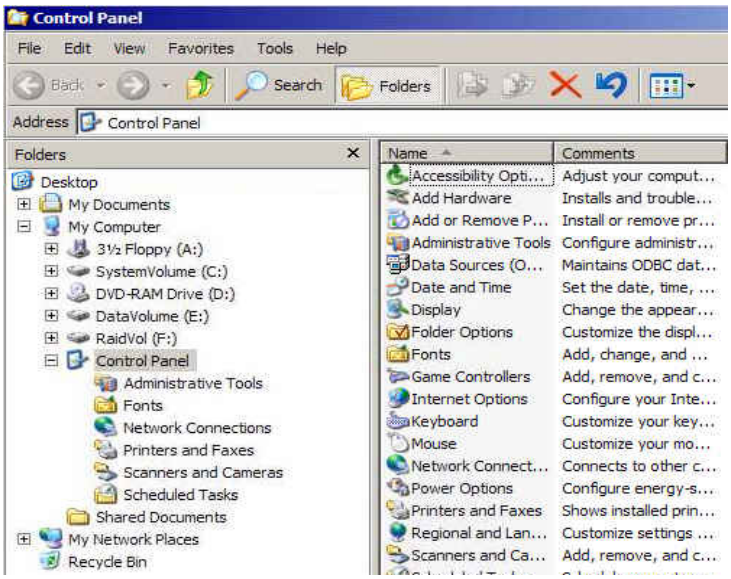


Figure 6-1: System Control Panel

The functions or programs you should be concerned with are as follows:

<Control Panel> applications

- {Add or Remove Programs} Use this to properly Add or Remove program packages on the Windows XP side.
- {Add Hardware} functions but is rarely used. Most preconfigured systems have all the hardware devices necessary already installed.
- {Date and Time}, and time zone are settable.
- The console {Display} resolution. The default video screen resolution is set to 768x1024. Other display settings are accessed in this program. Do not go below 800x600.
- {Network Connections} The network interface, TCP/IP and firewall settings are accessed through this menu. To set a fixed IP for the Windows side of the Server, use this program.
- {Regional and Language Option} is used to setup the Windows system's language and other format info. Regional setting for anywhere in the world is also selectable.

- The {System} selection will allow the administrator to access the Computer name menu, which allows you to change the Workgroup name of the Server. The System Restore menu, the Advance menu, the Remote access menu may also be accessed, but are seldom used. The hardware Device manager also has a menu.
- {Administrative Tools} allows the operator to clear the event logs, start or stop services and get to the {Computer Management} program.
- The {Computer Management} application allows the administrator to Defragment disk drives, add and format, and allocate disk partitions on new hard drives, RAID subsystems or DVD-RAM media. You may also access the hardware Device manager. The Event viewer is accessed from here. The System and Application event logs should be cleared about once every other month.
- The {Device Manager} is used to update device drivers and set up serial ports and other hardware functions. You may add new serial ports; tape, disks or DVD-RAM drives with this utility program.
- {Fonts} to add fonts for printers. Many are already installed.
- {Folder options} Leave the standard setting alone.
- {Internet options}. The Internet browser is not recommended for use on the system for virus protection. All Internet files and temporary directories have been deleted from the Eagle 760 Servers. We strongly suggest installing Virus protection software.
- {Keyboard} The option for key repeat is settable.
- {Mouse} options are accessible, but the standard setting should be used.
- {Power options}. The standard setting should be used. **Never allow the disk to spin down**. **Never allow the system to hibernate**. **Never allow the system into a standby mode**. **The AMOS Server must always be available**.
- {Printers and Faxes} Use this program to add Printers to the system so they can be mapped for AMOS use in the Printers option of the AMPC program.
- {Scheduled Tasks} Normally not used.
- {User Accounts} User accounts for the Administrator.

The functions that are not used for Eagle 760 Servers or have little use may be disabled in Windows are: <Control Panel> applications

- {Accessibility Options} not needed.
- {Data Sources (odbc)} has not been tested and may not function.
- {Mail} not allowed on the system for virus protection.
- {Game Controllers} Do not use.
- {Sound and Audio Devices} Do not use this program. Sound and the audio drivers degrade the system response so they should not be used or are disabled.
- {Scanners and cameras} This function is not supported under AMOS 8.x
- {Taskbar and Start Menu} You can customize the task bar to your liking.

Administrative Tools Overview

The <Administrative tools> application is used to de-fragment disk drives, clean up the event logs, and add, delete or restart Services. Use this tool to add and format new disk drives. These programs are only used once in a while by the System Administrator and are not for the general AMOS user. These programs will only run on the Console terminal. To add network printers to the Server, *double click* on the {Printers and Faxes} item to accomplish this task.

Clear Application and System Logs

The Administrator should clear the Event Logs with the <Event Viewer> for the {Application} and the {System} about once a month. This will keep the size of the logs down to about 65k each. These logs keep growing because certain Windows functions may log an entry.

From the <Computer Management > application, *Select*> {Event Viewer}, *Select*> {Application} and right *click. Select*>{Clear all Events}. This is shown in Figure 6-2 and 6-3.

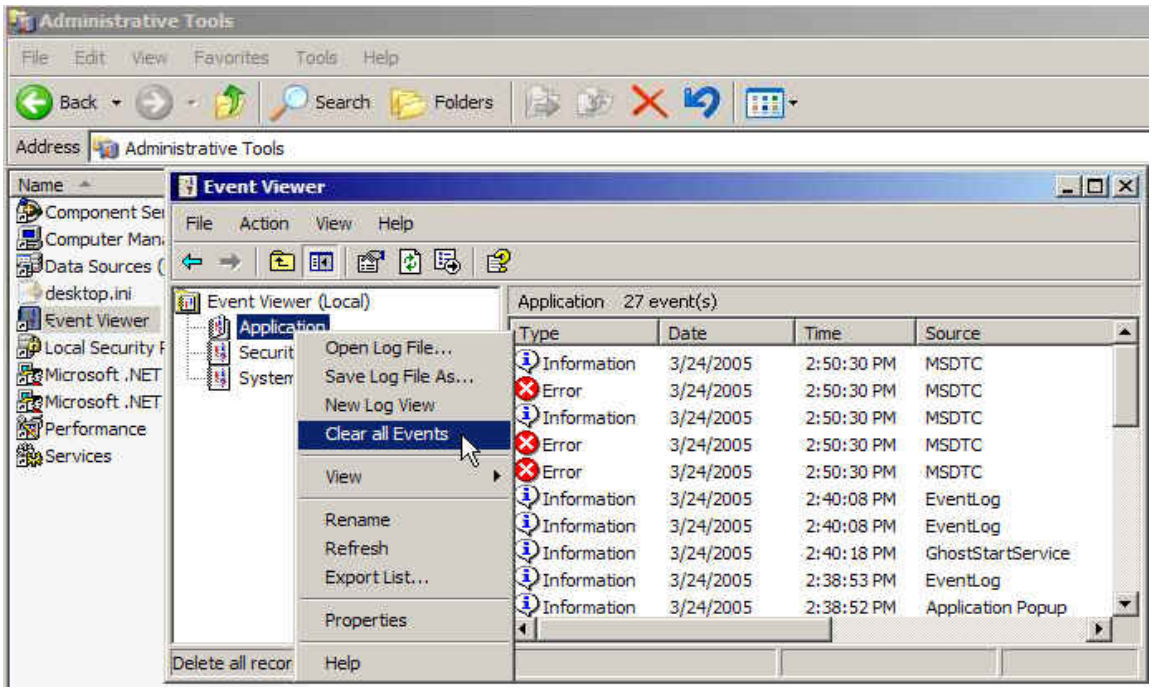
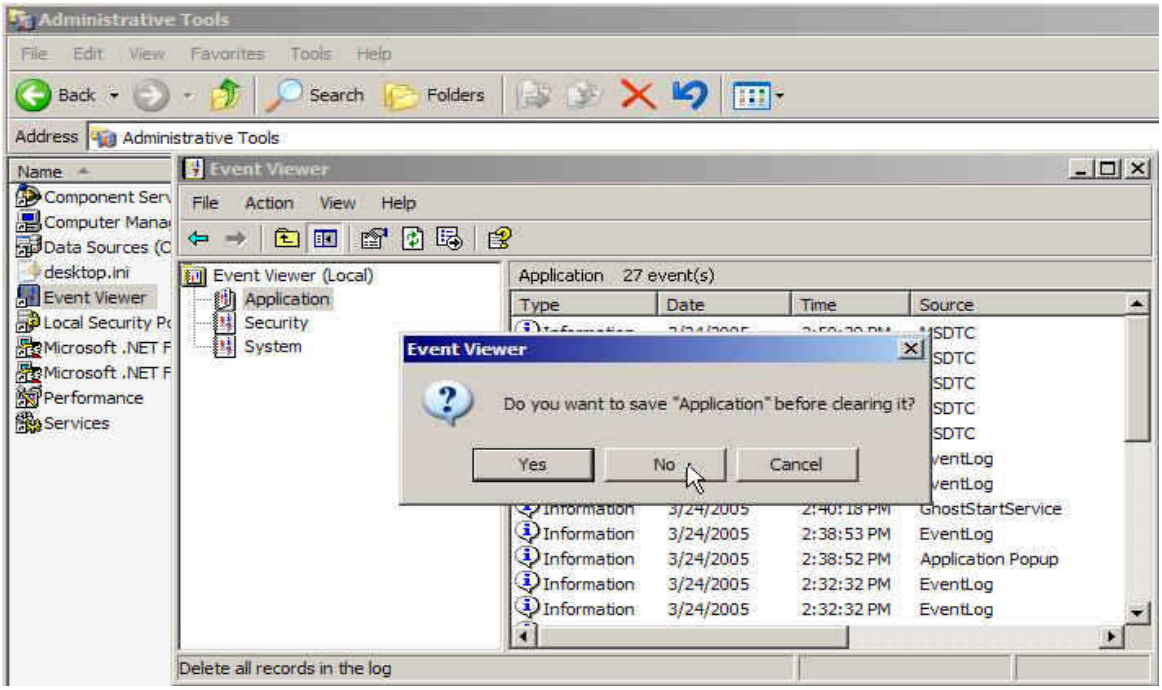


Figure 6-2: Computer Management –Event Viewer (Clear Application Logs)

Figure 6-3: Computer Management –Event Viewer (Select No save of the Application logs)



To execute this function, *Select*> [No] button.
Select> {Event Viewer}, *Select*> {System} and right *click Select*>{Clear all Events}. This is shown in Figure 6-4 and 6-5.

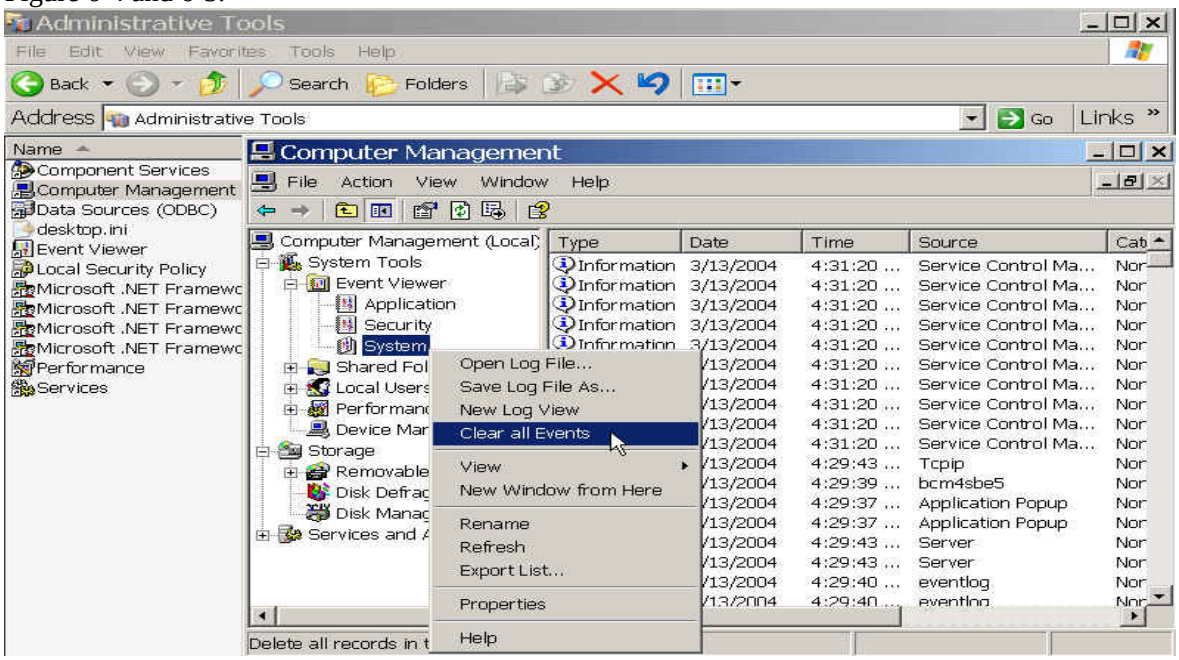


Figure 6-4: Computer Management –Event Viewer (Select System logs to be cleared)

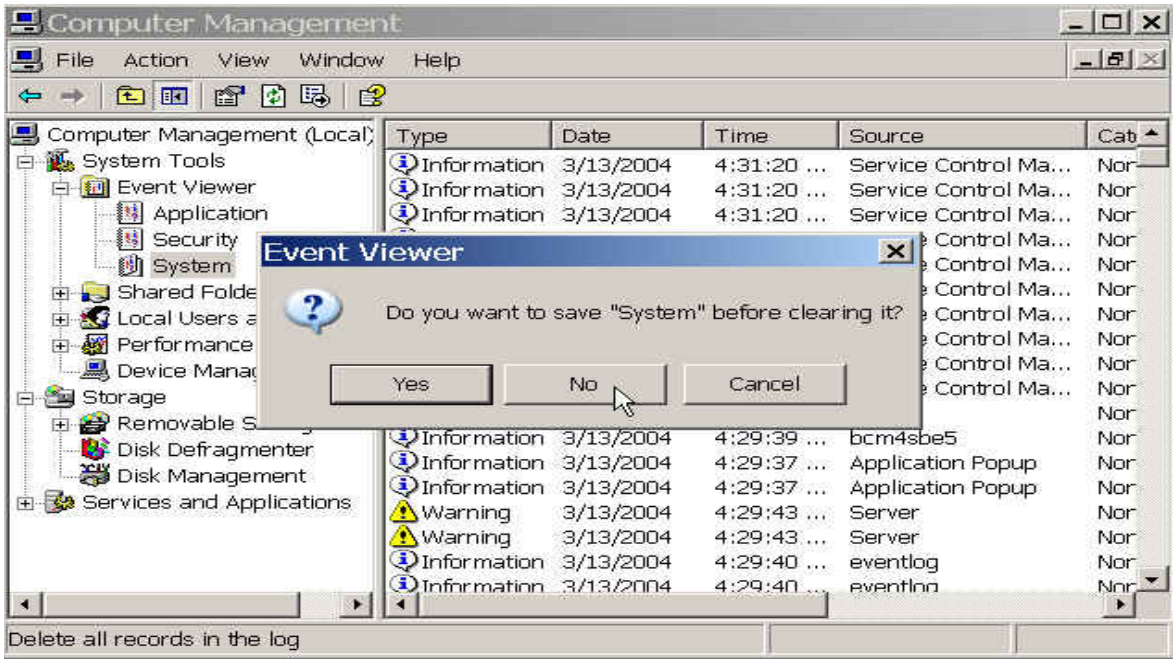


Figure 6-5: Computer Management –Event Viewer (Select No save of the system logs)

To execute this function, *Select*> [No] button

Other Administrative Tools

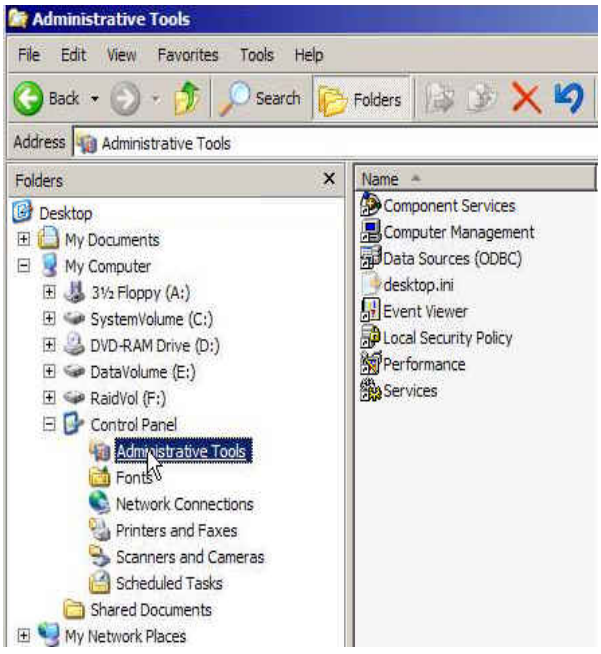


Figure 6-6: Administrative Tools

When adding disk drives to the system you must format and allocate these as storage volumes to Windows. To perform this task, *Select*> {Administrative Tools} and *Select*>{Computer Management} tool in the right panel, as shown in Figure 6-6.

Once the <Computer Management> application is loaded, find {Storage} and *Select*>{Disk Management} application.

To take advantage of the speed of Windows disk caching, the drives must be formatted in NTFS file system and made active to the Windows Operating System. As shown in figure 6-7, the Eagle 800 Server we have the standard internal drive partitioned as 2 logical volumes. The first partition 4.1Gb in size is reserved for the Windows software and the AMPC folder. The E: DataVolume drive is 12GB in size and is used to store the Customer generated AMD disk files.

On the Eagle 760 a standard 160GB hard drive is partitioned 80/80 GB. This results for the C: and E: drives. The primary partition C: drive is where Windows programs and documentation are stored. The C: drive partition includes the AMPC folder and all the subdirectories. The alternate boot disk file and the original AMPC.AMD file are stored in the {AMPC} folder on the C: SystemVolume. The E: DataVolume is a logical partition of the first physical drive. This drive is where the E: Backups folder is located. The system administrator should build the "**AMD**" disk files in the E: AMPC folder. The older Windows XP smaller drive is shown here.

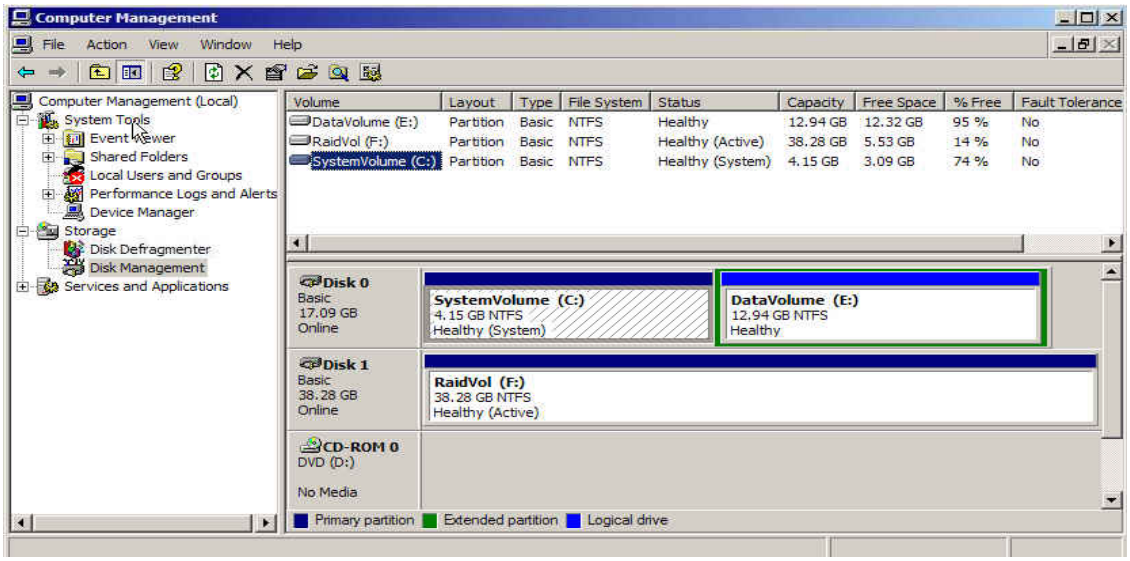


Figure 6-7: Computer Management Tool-Disk Management

Adding a RAID Volume & Selecting the RAID as Bootable for the Eagle 760

To make Active and Bootable Drive volumes, the new disk or RAID drives must have a Primary partition. When adding a RAID subsystem, the drive must be allocated as a Primary partition and formatted in NTFS. To format the RAID, *Right click* on the Disk 1 box in the lower panel and go through the Disk Wizard. Follow the on-screen menus for this process. *Right click* when the mouse pointer is over the box in the lower panel to activate the command menu. When finished formatting, *Right click* on the Blue bar and *Select* >{Active} from the pop up menu. The RAID subsystem is not bootable at this point. First exit the <Disk Management> application screen by *Select*> [X].

The RAID does not have a Boot Sector or a Windows operating system on it. To load the Windows OS with a correct boot sector onto the RAID, Alpha Micro has a special "Eagle 760 Bootable Recovery DVD" with an "Image" of this configuration. To load this configuration, place this DVD into the DVD-RAM drive and restart the system with Acronis Boot. From the Acronis True Image restore menu the RAID Image from the DVD to the RAID subsystem as a DISK RESTORE. Once this is done, reboot the Server. The RAID system should have a Windows Operating System on it with a bootable **AMD** disk file. You may erase the standard **AMD** disk file after generating your own **AMD** disk file. Make the disk file as large as you want. In our example, we made the **NEW.AMD** disk as 12 logicals and 2650MB in size. This left a few GB of storage for the Windows system software.

Once you have the Windows operating system with the AMPC folder containing all of AMOS 8.x support programs inside, to make the RAID the "Boot Volume", follow this procedure:

1. Shutdown the Server and Restart.
2. During the POST *press* the DEL key on the Eagle 760 system console.
3. The <BIOS > window should display.
    a. *Press* ← *to select* {Exit}, *Press* ← *to select* {**Boot**} *press* ENTER.
4. In the <Boot Select Menu> for the Eagle 760 you should see,
    CD-ROM Drive
    +Hard Drive
    +Removable Devices.
5. Press ↓ *to select* {+Hard Drive} and *press* ENTER
    {You should see the internal drive and RAID system. To sort the boot order, use the arrow keys and the (+) key to place the RAID first in the list, the internal drive second, and Bootable Add-in cards last.}
    Set the boot order like this:
    a. <Boot Select Menu>
        00, IDE Maxtor : 0
        Bootable Add-in cards
6. *Press* ESC *to select* {Exit Saving Changes}
7. *Press* ENTER *to display* {Setup Confirmation- YES}
    Press ENTER this should restart the Server with the RAID disk as the Boot Volume, making it the C: SystemVolume.

Verify that the system works correctly and load your application programs onto the **NEW**.**AMD** disk file on the RAID volume.

Disk Defragmenter

To clean up a disk volume and de-fragment the file system, select the {Disk Defragmenter} tool from the <Computer Management> application. *Select* the volume to clean up from the upper panel. Then *select* the [Defragment] button in the lower panel. A sample session is shown below. This process requires 15% free space on the drive to complete.

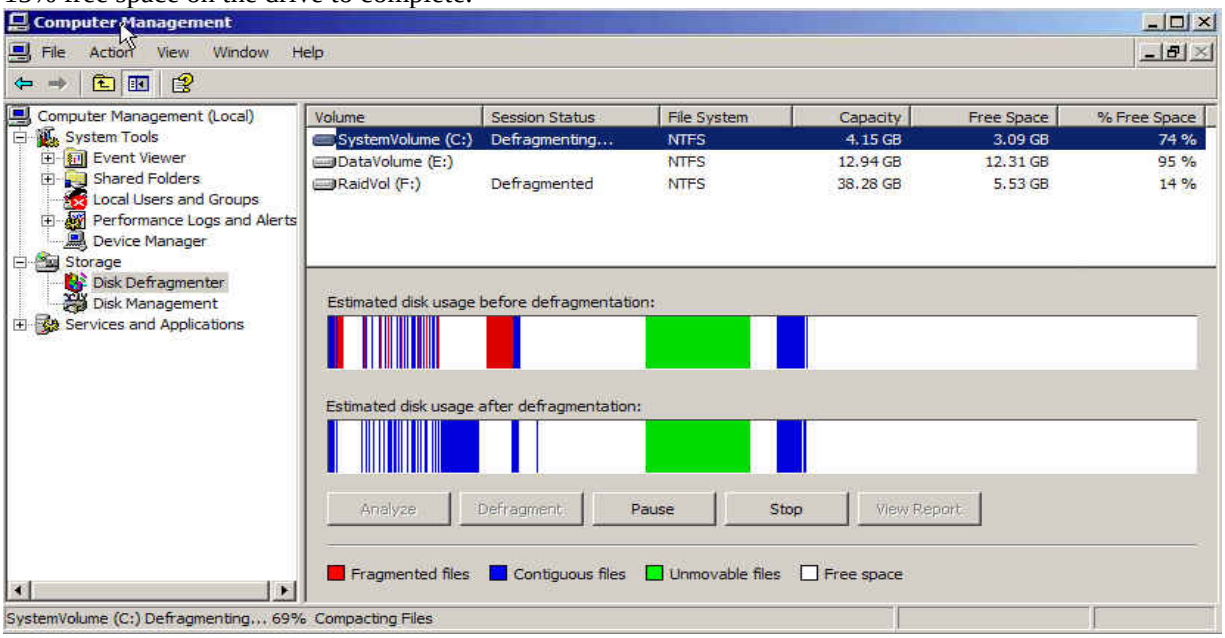


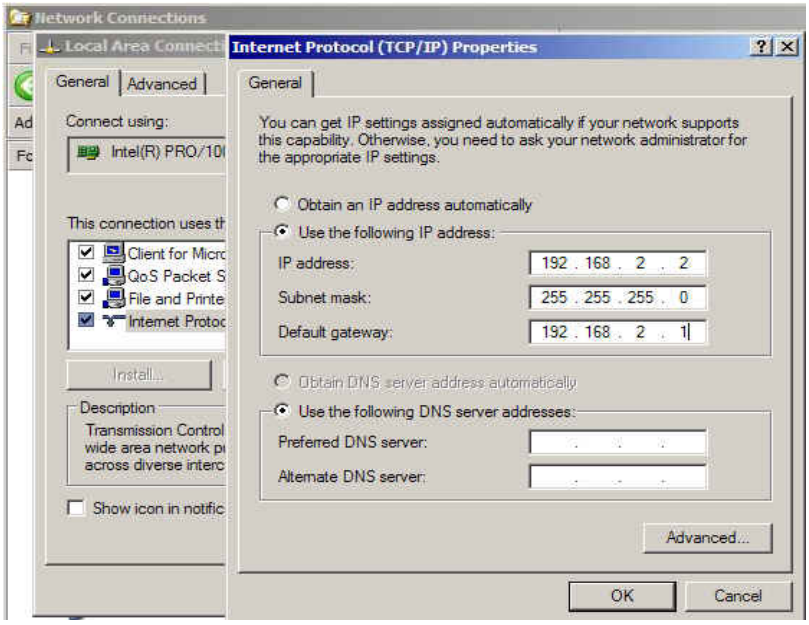
Figure 6-8: Disk Defragmenter

If you generate a large **AMD** file that consumes all the storage, you cannot defrag that volume. This process is necessary to fit as much data onto the drive and to be able to fit the data onto a CD-R media for a system Acronis backup.

How to set WINDOWS IP's

1. From the AMOS console VTM1 Terminal
2. Enter: ALT TAB to display the <AMPC Diagnostics window>
   a. *Select*> Tools> [Control Panel]
3. In the <Control Panel> screen
   a. *Enter* **N** or ↓ to *select* {Network Connections} *Press* ENTER
4. In the <Network Connections> screen:
   a. *Press* ↓ *to highlight* {Local Area Connection}
   b. *Press* ALT **F** opens the < File> menu item.
   c. *Press* **R** for {Properties}
5. In the <Networking Properties> screen:
   a. *Press* ↓ *to highlight* {Internet Protocol}
   b. *Press* ALT **R** for {Properties}
6. In the <Internet Protocol (TCP/IP) Properties> screen, set the IP information as desired.

If you do not have a DHCP Server, do not check {Obtain an IP address automatically}. Instead, assign a permanent IP. This IP address is needed for Microsoft Printer and File sharing and for VNC access to troubleshoot system problems. For AMOS to initialize the packet driver, the Windows side must have an IP.


Network Connections
Local Area Connect
Internet Protocol (TCP/IP) Properties
General
Advanced
Connect using:
Intel(R) PRO/10
This connection uses th
Client for Micro
QoS Packet S
File and Printe
Internet Protoc
Install...
Description
Transmission Control
wide area network p
across diverse interc
Show icon in notific
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 2 . 2
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 2 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

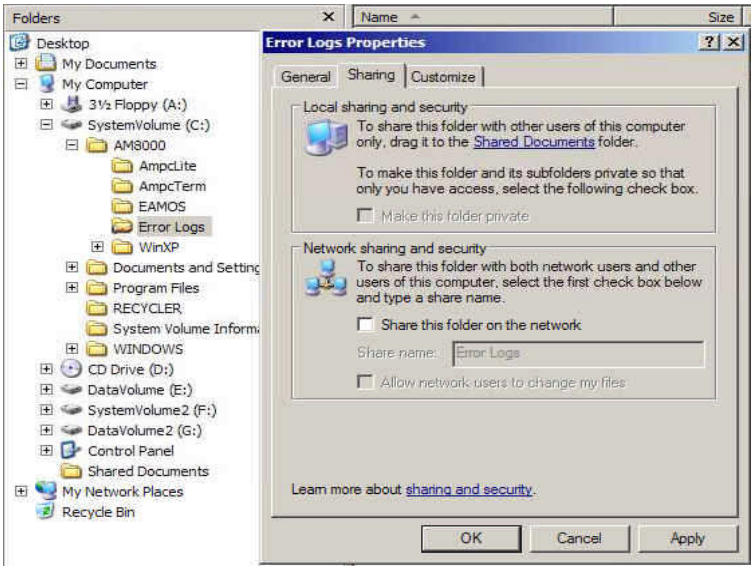
The sample on the left shows this, but your numbers will probably be different. Fill in the DNS addresses if you have any.

When you are done, *Select*> [**OK**]. The Server must be shutdown and restarted to install these changes.

Figure 6-9: Setting Windows's IP

Disabling Folder Shares

To disable a Folder Share use the <Explorer> Application. Search the folders for a little blue hand holding the folder name. In our example below {Error Logs} is shared. To turn off the share *right click* with the mouse cursor over the {Error Logs} folder. From the pop up menu, *Select*> {Sharing & Security}.



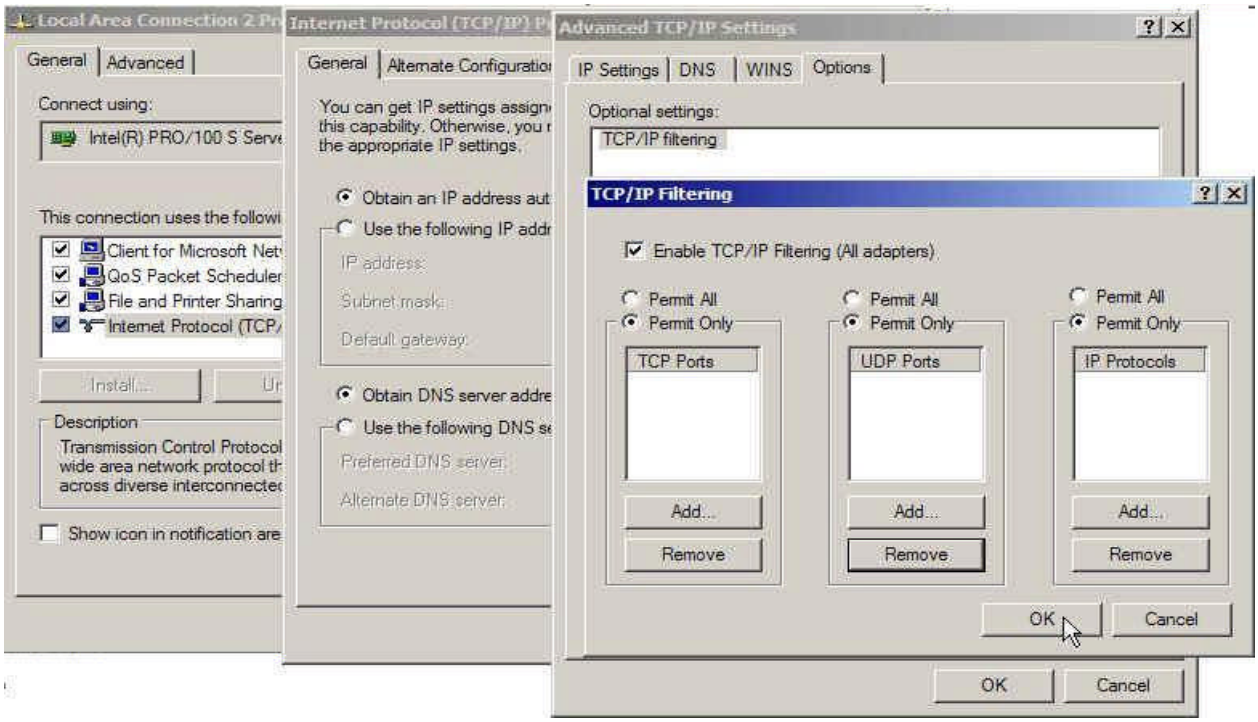
In the figure on the left, we clicked on the {Share this folder on the network} to Remove the check in the check box. *Select*>[OK] to finish the disabling procedure.

Figure 6-10: Disabling Folder Shares

Configuration for a Complete Network Firewall

Follow the procedure below to verify that the Network Firewall is enabled with **ALL ports disabled**. This procedure will place the machine setup back into the standard settings as shipped from Alpha Micro for all AMOS 8.x Servers. This firewall protects the Windows operating system from unauthorized intrusion. No ports are allowed. Do not allow any folders to be "Shared". By keeping the system folders "Not Shared", peer-to-peer viruses will be kept off of the Server.

1. From the <AMPC Diagnostics> window
    a. *Select*> Tools> [**Control Panel**].
2. In the <Control Panel> Right Panel *double click Select*> [Network Connections]
    a. *Select*> [Local Area Connection] and [*Right Click*] and *Select*> [Properties]
    b. *Select*> [Internet Protocol (TCP/IP)] with left mouse click.
    c. *Select*> [**Properties]** button.
    d. The <Internet Protocol (TCP/IP) Properties> window will be displayed.
        i. *Select*> [**Advanced**] button.
    e. The <Advanced TCP/IP Settings> window will display. *Select*>[**Options tab]**.
        i. <TCP/IP Filtering> will be highlighted in Blue.
        ii. *Select*> [**Properties**] button.
    f. In the <TCP/IP Filtering > window.
        i. Verify that the <**Enable TCP/IP Filtering (All adapters)**> check box is **checked**.
        ii. Verify that the {**Permit Only**} for {**TCP Ports**} is **Checked.**
        iii. Verify that the <**TCP Ports**> Window displays NO Port Numbers **{ }**



iv. If ports exist under that column, *Select* > the {port number} and *Click* on the [**Remove**] button.
v. Verify that the {**Permit Only**} for {**UDP Ports**} is **Checked.**
vi. Verify that the <**UDP Ports**> Window displays NO Port Numbers { }
vii. If ports exist under that column, *Select*> the {port number} and *Click* on the [**Remove**] button.
viii. Verify that the {**Permit Only**} for {**IP Ports**} is **Checked.**
ix. Verify that the <**IP Ports**> Window displays NO Port Numbers { }
x. If ports exist under that column, *Select*> the {port number} and *Click* on the [**Remove**] button.

g. As shown in Figure 6-11, the <TCP/IP Filtering> application menu is configured for a complete firewall, no ports allowed for TCP, UDP and no IP protocols.
h. *For the <TCP/IP Filtering window > Select*>**[OK]** button to **apply** these settings. To exit out of < Advanced TCP/IP Setting > *Select*>**[OK]** button.

3. To exit out of <Internet Protocol (TCP/IP) Properties> *Select*> **[OK]** button.
4. To exit out of <Local Area Connection> Select> **[Close]** button.
5. This completes the Firewall Enabled section. If you made changes to the system settings, the system will reboot. If no changes were made, you're done.
6. Allow the system to re-start.

Figure 6-11: Complete Firewall Enabled

Network Firewall Changes to Enable Remote Access

The standard settings as shipped from Alpha Micro for all Eagle 760 Servers is a complete Firewall. No ports are allowed through. Do not allow any folders to be "Shared" on Eagle 760 Servers. Keeping the system folders *"not shared"* will keep peer-to-peer viruses off the system. Having said this, let's first discuss what port numbers are needed to allow different access to the Windows side. The list below is a portion of the {Services} file in the Windows directory and shows some ports and their descriptions, which we may need to use.

```
domain          53/tcp                  # Domain Name Server
domain          53/udp                  # Domain Name Server
epmap           135/tcp     loc-srv     #DCE endpoint resolution
epmap           135/udp     loc-srv     #DCE endpoint resolution
netbios-ns      137/tcp     nbname      # NETBIOS Name Service
netbios-ns      137/udp     nbname      # NETBIOS Name Service (name lookup)
netbios-dgm     138/udp     nbdatagram  # NETBIOS Datagram Service (network browsing)
netbios-ssn     139/tcp     nbsession   # NETBIOS Session Service (file shares & printer sessions)
printer         515/tcp     spooler     # shared printers
                5900/tcp                # VNC access
```

To enable VNC and allow peer-to-peer network access or network printing, the firewall must allow certain ports through. To set up the firewall to allow the VNC remote administration to function and peer-to-peer network access, follow the procedure below.

1. From the <AMPC Diagnostics> window
2. *Select*> Tools> [**Control Panel**].
    a. In the Right Panel *double click Select*> [Network Connections]
    b. *Select*> [Local Area Connection] and [*Right Click*] and *Select*> [Properties]
    c. *Select*> [Internet Protocol (TCP/IP)] with left mouse click.
    d. *Select*> [**Properties]** button.
3. The <Internet Protocol (TCP/IP) Properties> window will be displayed.
    a. *Select*> [**Advanced**] button.
    b. The <Advanced TCP/IP Settings> window will display. *Select*>[**Options tab**].
        i. <TCP/IP Filtering> will be highlighted in Blue.
        ii. *Select*> [**Properties**] button.
    c. In the <TCP/IP Filtering > window.
        i. Verify that the <**Enable TCP/IP Filtering (All adapters)>** check box is **checked**.
        ii. Verify that the {**Permit Only**} for {**TCP Ports**} is **Checked.**
        iii. Verify that the <**TCP Ports**> box displays Port Numbers {**137 and 139 for peer to peer network access, or only port 5900 for VNC remote administration}** **{**You may add port 53 if DNS is needed, but most sites do not need this port.}
        iv. If not, under that column *Select* > [**Add**] button and fill in the missing numbers.
        v. Verify that the {**Permit Only**} for {**UDP Ports**} is **Checked.**
        vi. Verify that the <**UDP Ports**> box displays Port Numbers {**137,138**} for peer to peer network access.
        {You may add port 53 if DNS is needed, but most sites do not need this port.}
        vii. If not, under that column *Select*> [**Add**] button and fill in the missing numbers

viii. Verify that the {**Permit Only**} for {**IP Protocols**} is **Checked.**
ix. Verify that the <**IP Protocols**> box displays NO Port Numbers { }

d. *For the <TCP/IP Filtering window > Select>***[OK]** button to **apply** these settings

4. To exit out of < Advanced TCP/IP Setting > *Select*>**[OK]** button.
5. To exit out of <Internet Protocol (TCP/IP) Properties> *Select*> **[OK]** button.
6. To exit out of <Local Area Connection> *Select*> **[Close]** button.
7. This completes the Firewall Enabled section. If you made changes to the system settings, the system will reboot. If no changes were made you're done.
8. Allow the system to re-start.

If these settings do not work for you try adding TCP port 53. Remember that the system is now open but restricted to the above ports. When you are done with remote administration, it is a good idea to remove the ports defined above to re-enable the complete firewall protection. If you are having problems with DNS, you may enable IP Protocols by selecting {Permit All}. An alternate is to only add IP Protocols 0,1,6 and 17.

To test the VNC connection use the procedure titled "Remote Administration".

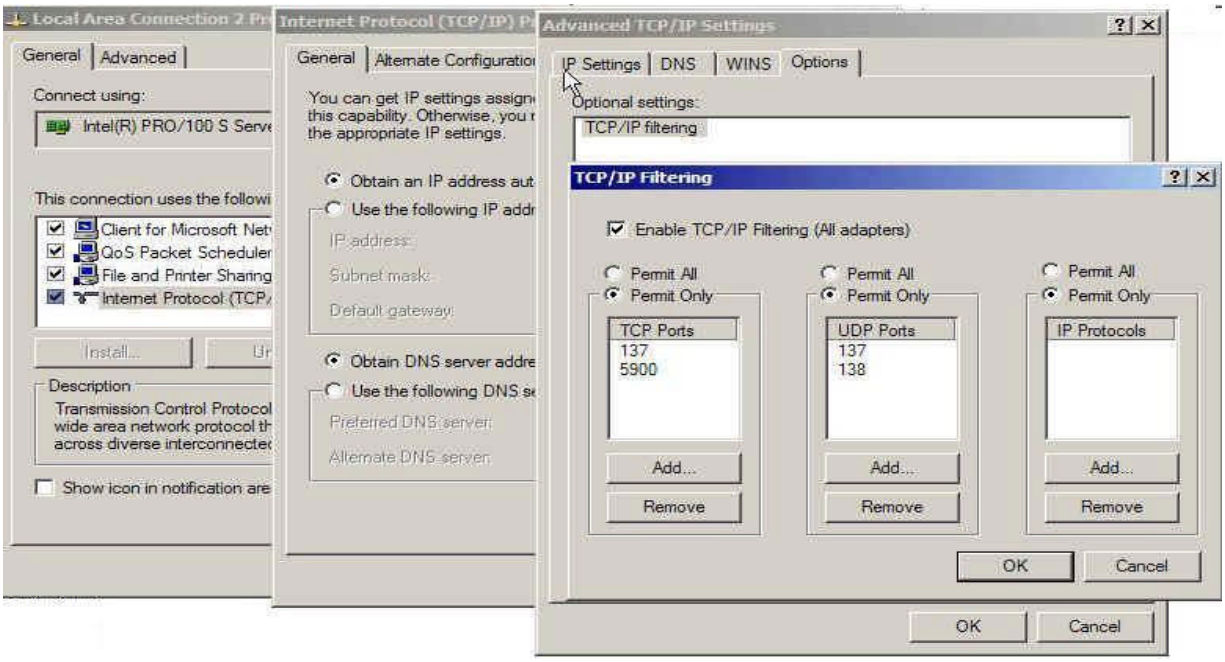


Figure 6-12: Firewall Enable for VNC to Function

Remote Administration

Eagle 760 Servers may be remotely managed with the **UltraVNC** program or (RDC) Remote Desktop Connection from Windows. UltraVNC software allows a Virtual Network Connection to the Windows side of the Server. This allows the VAR or system administrator to configure or make minor system changes without being at the Console Terminal. To allow this access, an Ethernet network must be used. The network router must allow TCP port 5900 to pass through. The IP of the Windows side of the Server

is what the remote administrator connects to. The remote system must install the UltraVNC viewer and provide the Server's password to gain access to the AMOS Server.

UltraVNC uses the Windows side's IP address, not the AMOS IP address. The default password to the Eagle 760 Servers is: { **ampc** }. This 4-character password is case sensitive.

To install the UltraVNC viewer on the Remote PC, *browse* to the {C:\AMPC\Windows} folder. Find the program named "UltraVNC-1.0.9.5-x86-setup.exe" for 32bit systems. UltraVNC-1.0.9.5-x64-setup.exe" for 64bit systems. Transfer this file to your remote PC that is running Window 2003, Windows XP, or Windows 7. Execute the setup program on the remote system. This will install the help files, PDF files, and the Server and viewer programs. Follow the instructions this program displays.

To gain access to the Eagle 760 Server, each system has a unique access name in the following formats:

- Eagle760-Sn100 ; for Eagle 760 serial number 100
- To change the default password, follow the UltraVNC Server documentation or reinstall the UltraVNC software on the Eagle 760 Server. Input the new password when the installation program asks for it.
- To terminate a VNC session *Select* >[X] in the VNC program window.
- To disallow VNC access, remove the TCP port 5900 from the network firewall properties.

Defining a Local Workgroup

The Eagle Server should be part of the local work group so it may be located easily. To change to your installation's workgroup, execute the following procedure:

1. In <Control Panel>, *Select*> [**System**] and *left double click*.
2. The <System Properties> menu will display. *Select*> [**Computer Name**]
3. *Select*> [**Change**] button to
4. Display the <Computer Name Changes> menu.
    a. In the Member of box, the {Workgroup:} input box will display "**AM**"
    b. *Type over* this entry with (**your local workgroup**) name.
    c. *Select*> [**OK**] button. Windows will then join the local workgroup you entered.
    d. *Close* the <System Properties> by *Select*>[**OK**]
    e. *Close* the <Control Panel> *Select* > [**X**]

Browse the {My Network Places} from the <Explorer> application, locate and *double click* on {Microsoft Windows Network}. Under this selection, find the new workgroup name you entered. Double click on that new name. Under this selection you should see the Eagle760-Sn100 system name along with other systems or workstations in the local workgroup. {Your system will have a different SN1xx}.

PC Serial Port Installation and Renumbering Procedure

This procedure is required only when you add in a new PCI or USB serial interface to the system. Use the manufactures install CD to install the driver software for the new hardware.

1. On the console using the mouse find the control panel and execute the task manger.
2. In < Task manager > *click* on [**NEW TASK**]
    a. In the {Task Box} *type in* (**EXPLORER**) (**Enter**)
    b. Minimize the Task Manager box; *click on* [_] in the upper right hand corner.

3. In the <Explorer application>
    a. *Select*> [Folders] in Task bar to Split screen.
    b. *Select* > [Control Panel]
    c. *Select*> {System} and *double click.*
    d. *Select* > [Hardware> [**Device Manager**]
4. <Device Manger window> Find *the Yellow? under* {MultiFunction Controller}
    a. *Select*> Yellow **?** mark, [unknown hardware], right *click* [**Select Update Driver**] button.
    b. *Select*> {Install from a List or Specific Location (Advanced)} *Select*> [**NEXT**]
    c. Deselect Search Removable media, *Select* > **Browse**>
    In the Pull down box, *Browse to* **C:\AMPC\Windows\ESC100**
        a) *Select*> [**OK**]
        b) *Select*> [**NEXT**]
    d. Let the driver install, *Select*> [**NEXT**] when asked.
    e. Now Select under ports *right click Select*> [**UPDATE Driver**]
    f. Install from the Recommended Location. *Select*> [**NEXT**]
    g. When done *Select*> [**Finish**]
5. When the <Device Manger> is finished, the system should have
    PORTS [COM1] [COM2][COM3][COM4][COM5][COM6]

1. *Close* <Device Manager> with the [**X**] in the upper right with the mouse.
2. *Select*> [**OK**]
3. In the <Explorer > application
    a. *Find* and *Select* the {C:\AMpc} Folder.
    b. *Find* {**Configure AMPC**} and *double click.*
4. In the <AMPC Configure window>
    a. *Select*> [Serial Ports] Tab.
    Make sure that the serial ports are sequentially numbered from 1 to 7 in the left box.
    If they are not, you must redo the port assignment task above again.
    b. If all is correct, then *Select* with the mouse and *Drag COM3* in the left box and *Drop onto COM3* assignment in the *right box*.
    c. Repeat these steps for PORTS 4, 5, & 6. (or, as many as may be needed)
    d. *Select*> [**OK**]
    e. *Select* >File >[**Exit]** and [Quit]
5. *Select* your TEST.INI file in the AMPC folder
    a. Add the PCCOM ports
    b. Add the TRMDEF, JOBALC, SETJOB statements.
    c. *Finish and Save* your TEST.INI file.
6. *Create* a Short Cut in the {AMPC} folder.
    a. *Copy and paste* {E810Sio.Boot} into the {AMPC} Folder
    b. *Right click and Rename* the copy to `E6Sio.Boot` or new name you choose.
    c. *Right click and Select* [Properties].
    d. In the Shortcut Target line *Place cursor over* the /L:E10SIO.INI and Type (`E6SIO.INI`)
    e. *Select*> [**OK**]
7. *Double click* on the boot shortcut and verify that COM1 through 6 are scanned and are assigned to an AMOS port.
8. Test all new COM ports with serial devices and verify operation, then you are done.

ACRONIS SOFTWARE

To enter the Acronis True Image 2011 utility software from the <Diagnostic> window, *Select*> Tools> Acronis backup and *left click*. The < Acronis True Image> menu will appear. This may also be accessed from the All Programs start menu in Windows. To create a Eagle760 Data Recovery DVD and perform a Backup of the C boot partition.

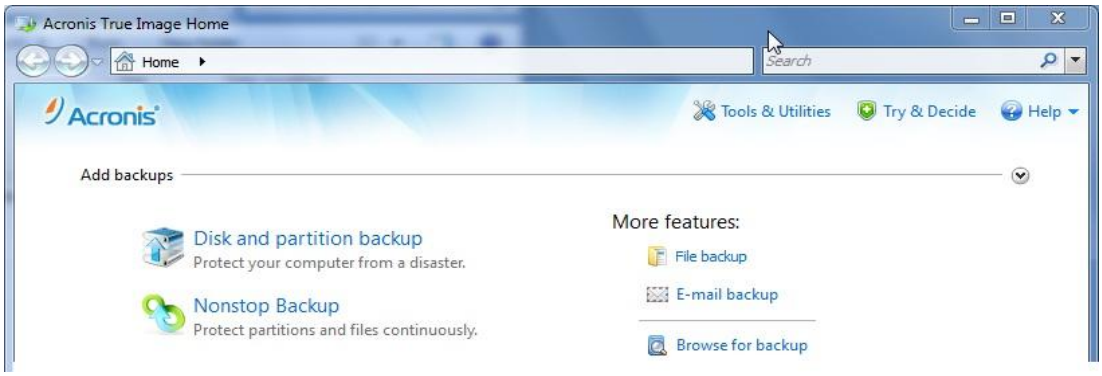


Figure 7: Acronis True Image Version 2011

The backup process is very easy. The menus are easy to read and follow. There is Help link available in the upper right hand corner of the dialog box.

Backups can be made on many different media types. We have tested the following with success.

- Blu-ray BD-RE, DVD-RW, DVD-RAM, DVD-R, CD-RW
- USB Flash sticks of 4,8, 16Gb formatted in NTFS
- USB Hard drives of various sizes
- SAS and SATA hard drives in removable trays

To create a bootable recovery media on DVD-RAM, DVD-RW, DVD-R, BD-RE make sure when you select the DVD drive icon, check the checkbox next to the message { Make this media Bootable }

Any hard drive can be used to create and store backup images. The D: OSBackups drive is used for this purpose. Or a folder called EagleBackups is where the C boot partition images are stored. A removable SATA drive tray can also be used to store backup images. This allows the user to change the drive and take the backup data off site.

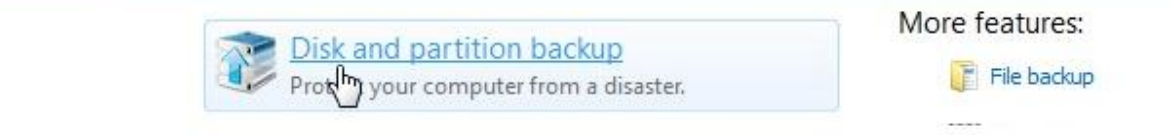
Another location that can be used as a storage destination is a mapped network drive. You can also create a backup task for this location. This is the slowest backup option available to you. It also ties up the network with the data transfer.

You can also create a {File Backup} from the main menu. This is listed under {More Features}
You can select any folder or disk partition from the pop up menus. Make sure you destination drive is not selected to be contained in the backup.

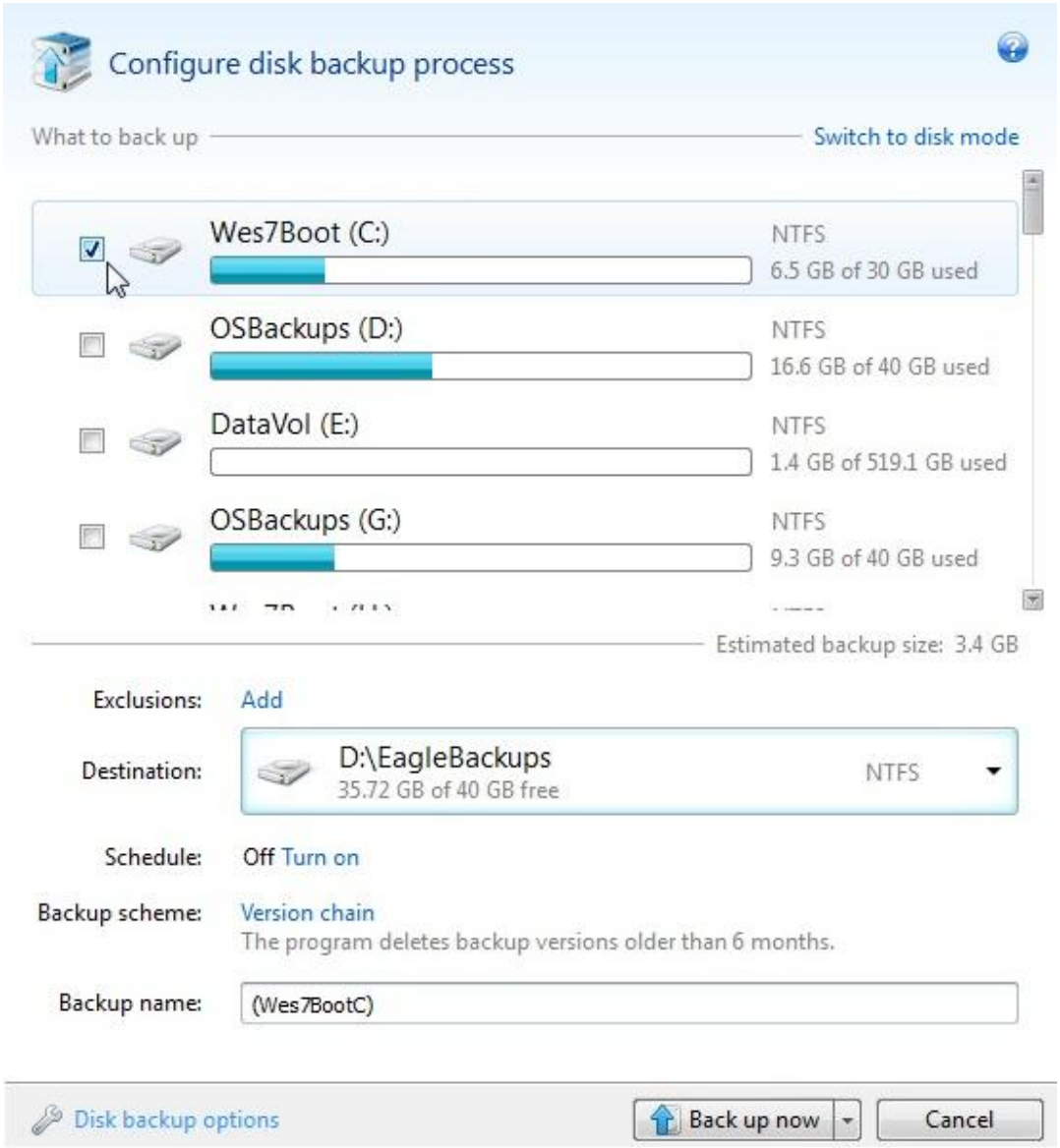
If you have an exact size disk drive you may also " Clone " your source drive. This process is accessible from the Tools & Utilities link in the task bar. Follow the menus to accomplish the task.

Now let us create a boot partition backup task.

First select Disk and partition backup.

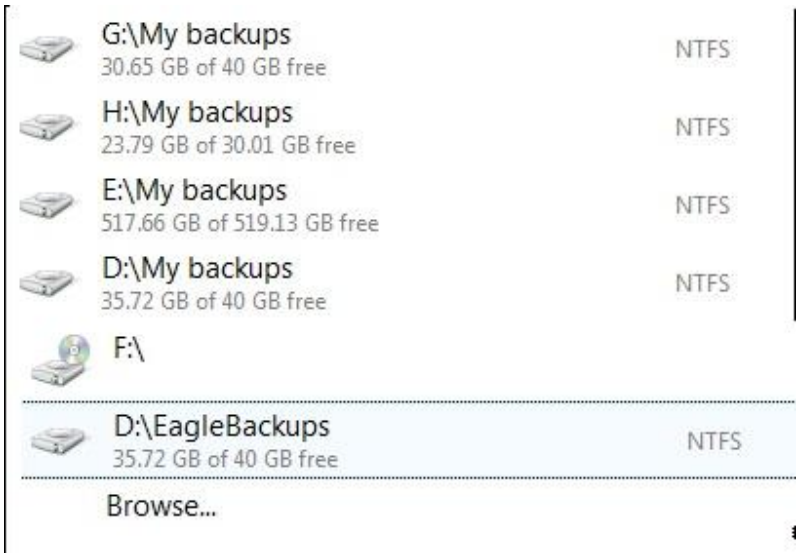


This is the pop up menu that appears. Now click on the check box to the left of Wes7Boot C:

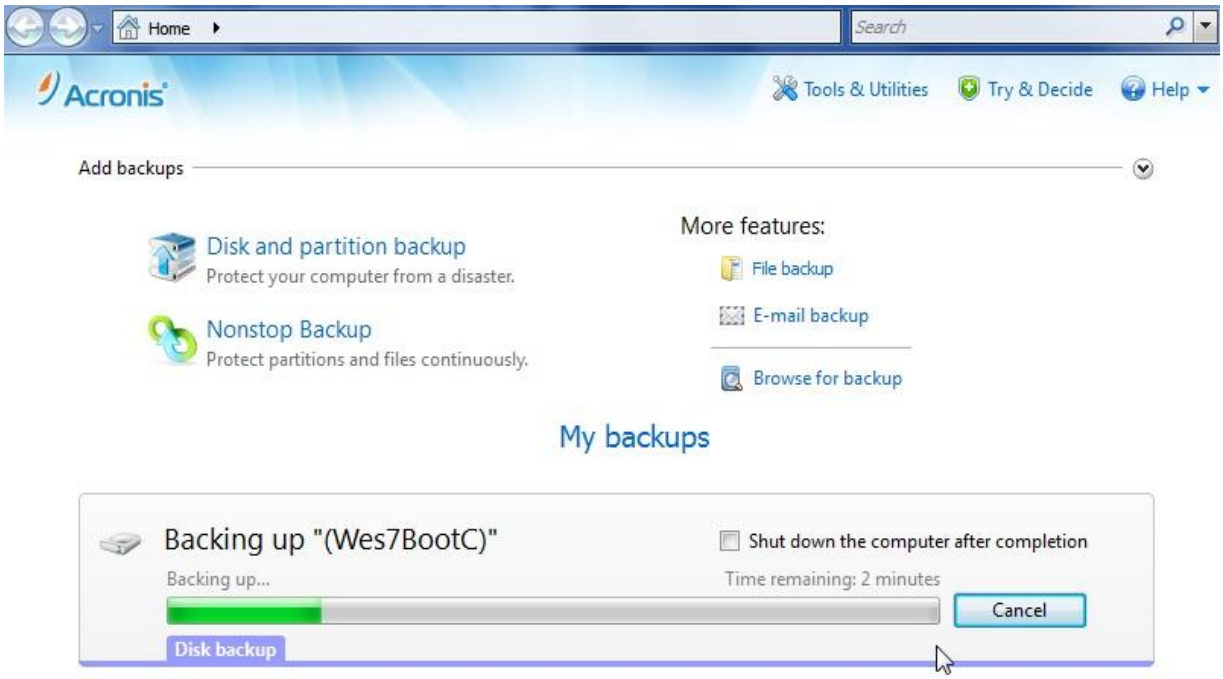


Now move the mouse down to Destination box down Arrow left click and select D:\EagleBackups as shown here.

This assumes that you created the EagleBackups folder when you partitioned the disk drive.



Now click on [Back up now] button.
True Image will create a new backup in the above destination folder of the Wes7BootC partition.



When complete you may access the log file by clicking on the little blue down arrow to the right of Help in this screen. Select log file in the pop up menu. Double click on the first entry in the list and use the scroll bar to inspect the contents. You can create other backup tasks that can place the backup on Bootable DVD, or Blu-ray media. You can also write the backups directly to SATA, USB drives or USB sticks directly if there is enough room. As always, read the screens carefully and verify where you are writing the data. Read thru Acronis Help screens if you have more questions. The online help screens are very useful.

Restoring the Windows 7 Boot C Partition

The most reliable method of restoring the boot partition operating system to a new disk drive must be done from the bootable Acronis Data recovery DVD provided. You should only have one hard drive plugged into the SATA controller. This is your new drive you have pre-formatted ready to use.

1. Place the Recovery DVD into the DVD drive and hit the reset button. Allow Acronis to boot from the DVD and press a space bar to accept to boot from DVD. When the first screen appears, select { Acronis True Image Full Version } and hit return. Allow Acronis 2011 boot up. The main screen should appear. Select with the mouse [Recovery] and left click. The Disk Recovery screen should appear.

2. Click on the [Browse for backup] button. A browser window will appear. In this window either select the CD drive or browse to [OSBackups] double click to expand. Double click on [EagleBackups] folder. Find and select with the mouse [Wes7BootC.tib] file and press on the [OK] button.

3. In the Images display, Find the Windows7BootC partition symbol and right Click, select [Recover]. The Recovery method should select { Recover disk and whole partitions } Click on [Next]

4. On select items to recover menu, click on ONLY the box to the left of
{ NTFS (Windows7BootC) Primary, Active }. Click on the [Next] button.

5. Now the Specify recover setting of Partition C will display. { New Location }
In Partition Destination dialog click on the {NTFS (Wes7BootC) Pri,Act 30Gb partition} should highlight in Blue. Click on the [Accept] button.

6. Under Partition Type: you should have displayed { Primary, Mark partition as Active}

7. Under Partition Size: { 30Gb } should display, Click on [Next] button.

8. The Summary Page, you should review that all the settings are correct. Click on [Proceed] button. When it finishes, click [OK] then Click on the Red [X] to close the program.

The Acronis Restore process is normally used when a new replacement hard drive is installed. After the restore all system settings and configuration settings must be re-entered for the AMOS Server installation. The Bootable Acronis Recovery DVD shipped from Alpha Micro has the default settings and the original disk files. Any patches or Customer data applied to the Server after installation will be missing.

The system administrator should perform an Acronis backup to a file of the Wes7BootC partition any time there is a configuration change to the Server. This up-to-date backup will contain all the information about the specific installation. Then this backup should be copied to alternate media and labeled and stored for future use.

If the boot **AMD** disk file was on the first disk partition, then the customer's **AMD** disk files will have to be regenerated and the application software restored back onto the system drive. If the system administrator places the AM9000.AMD boot disk on the E drive, it will also have to be restored from the D: Data partition backups. After an Acronis restore to a new disk drive, if you have additional backups of just the **AMD** disk files then you are safe. These **AMD** files will need to be copied to the correct locations and then Configured in the AM9000 program as described in Chapter 3 of the AMOS 8.x Servers Owner's Manual.

Getting to a Production Configuration

If you had changed any of the Eagle760 configuration information since creating the bootable backup DVD, such as adding Microsoft Network printers, COMxx ports, SCSI devices, firewall settings, etc., then you will need to repeat those changes.

In addition, the AMPC.INI, and other customized .INI files, and perhaps even the AMPC.MON, may not be current. Production versions are normally on the AMOS 8.2 **AMD** disks on the "Data Partition". after restoring the latest backup (see below), these can be updated by simply MONTSTing from the latest backup copies - like MONTST AMPC which will re-syncronize the "Boot Partition" copies.

If the "Data Partition" partition (usually E:) was restored, then restoring the production system is done. If this was the most recent backup of the AMOS data, then the whole procedure is done. If there is no "Data Partition" (it was not on the backup), then create a data partition using the New Partition Wizard described earlier in this manual.

If necessary, create an AMOS **AMD** pseudo drive using the AMPC configuration process described in this *Eagle760 Owner's Manual*. Generally we recommend disks of 4 GB or less so that each will fit on a DVD-RAM media. However, the choice is yours: Using a large tape drive or the Acronis compression will allow backing up much larger **AMD** files.

Proceed with restoring the last AMOS backup as appropiate to the backup procedure used. Then, as mentioned above, use MONTST to re-syncronize the "System Partition" copies of the important .MON and .INI files. If you used the above procedure to install a "sub-system" drive, you can change the motherboard BIOS settings to boot off of the newly defined disk drive.

Restoring just one file from an "Acronis" backup

For this feature to work you must have created the backup as a "Partition Image". Once this is done you can just double click on the "TIB" file and windows explorer will mount the image and you can then drill down in the directory to find and copy any file from the backup.

The other option available is to create a "File Backup." This type you must restore the complete backup created to the original folder or Alternate location. Make sure that the disk drive that has enough space for the files that were backed up to be restored. This type can compress the folder files into a more manageable size that can be place on a USB stick, USB drive or over the network on another server.

If you want to access a few files from an Acronis Partition backup, you can copy the appropriate **AMD** file from the Acronis backup to the hard disk. Then configure this copy of the **AMD** file as a sub-system drive in the AMPC AMOS Disks configuration screen, and if necessary, add it to the booting .INI file. Then you can access all of the AMOS files in the **AMD** drive disk file.

The special part is getting the **AMD** disk file from the Acronis Partition backup. This is done using the Acronis Explorer:

Open up Explorer and browse to the D:\OSBackups folder and double click on the "TIB" file you wish to recover from. Once Acronis Explorer is open then open the appropriate drive letter. Find and select the desired **AMD** file. Right click and COPY. Browse to your desired disk drive location that has room for this file, Right Click and paste.

Remember that if AMOS is active and the filename of the disk file is the same as the one open, and the destination is the same folder, Acronis Explorer will not be able to complete this function. Exit AMOS and then you may write the disk file back to the active location. It is always safer to restore to an Alternate location.

Chapter 7 - Hints, Restrictions & Shortcuts

MINIMUM SYSTEM CONFIGURATION INFORMATION

The Eagle 760 Server must have the following:

- Keyboard, mouse & system console must be installed.
- Always boots into the VTM1 terminal as the console job.
- Always boots from an **AMD** disk file.
- One Hard Drive formatted in NTFS file system.
- The Windows XP operating system installed on the first boot drive.
- The USB –SSD dongle must be installed for AMOS to boot.
- Minimum of 256MB of main system memory installed.
- One DVD-RAM drive installed.
- The minimum memory allocated for AMOS should be 32MB or greater.

MINIMUM BOOT CONFIGURATION

In the AMPC Folder on the C: drive, the following files must exist to boot the Servers. Even though there are more files in the standard configuration and more directories, please don't experiment erasing any files in the preconfigured systems delivered from Alpha Microsystems. Only erase files, which you place in these directories. Please do not place any user files in the EAMOS folder.

```
C:\AMPC\AMPC.EXE
C:\AMPC\AMPC.MON
C:\AMPC\AMPC.INI
C:\AMPC\AMPC.AMD
C:\AMPC\SUB.AMD
C:\AMPC\CONFIG AMPC
C:\AMPC\BOOT AMPC
C:\AMPC\Default.aln
C:\AMPC\Install.cfg
C:\AMPC\MONTST.EXE
C:\AMPC\PCANDIS5.SYS
C:\AMPC\PCAsp50.SYS
C:\AMPC\RawEther.dll
C:\AMPC\AtUsbHid.dll
C:\AMPC\UmKw50.Dll
C:\AMPC\Umscsi50.Dll
C:\AMPC\W32N50.Dll
C:\AMPC\W32N55.Dll
C:\AMPC\AMPCLITE ;folder with all terminal emulator files
C:\AMPC\AMPCTerm ;folder with all terminal emulator files
C:\AMPC\Error Logs         ; folder
```

```
C:\AMPC\WinXP\              ; folder
```

The Windows operating system folders, files and programs must be present for the Server to boot:

- `C:\Windows` and all its subdirectories and files.
- `C:\Program Files` folder and all sub-directories and programs.
- `C:\Documents and Settings` folder and all sub-folders files and programs.

Please don't erase any programs or files in these folders and sub-folders. The Windows operating system needs these to operate. The Windows is small enough not to concern any person using the Eagle 760 Servers. The basic size including AMOS and two AMD disk files is not much larger than 2GB in total size. The minimum size disk partition is 10 GB allowing room for log files, system updates and backups.

SWITCHING BETWEEN AMOS AND WINDOWS

To switch between the VTM1 job and Windows system, press ALT/TAB on the console keyboard. This will display the <AMPC 7.1 System Diagnostics> window under the control of AlphaShell. From the <AMPC 7.1 Diagnostics > window, *select*> [Tools] to gain access to the {Control Panel}, {Task manager}, {Notepad Editor} or {Acronis}. The Control Panel has been discussed in detail in Chapter 6. The Notepad editor can be used to change text files in the Windows environment. Acronis is a backup and restore utility for disk volumes. The Task Manager is the Windows program that provides information about programs and processes running on the Server. It is also the gateway to the performance monitor. The performance monitor is useful (occasionally) but does slow down the system, so we advise against using this feature. The operator can load multiple programs and use the ALT/TAB keyboard command to select the correct task.

USING MULTIPLE VIRTUAL TERMINALS

You will find virtual terminals on the console very easy to use. Switching from one virtual terminal to any other is just like switching from one Window to another. As you switch from one virtual terminal to another, the processing continues for the task running on the virtual terminal you left. When using AMPCLiTE, to switch VTM jobs press (**Control**)+(**Tab**) on the console keyboard or use the *mouse to click* on the terminal session if the tiled display option is used. To select full screen *click* on the full screen box in the upper right hand corner of the VTM session. Or with the mouse, place the cursor over the window header and *double click*. When using AMPCTerm, *press* (**Alt**)+(**Tab**) to select the correct VTM job.

Many systems have been shipped with the Metropolis function keys enabled for AMPCLiTE. This will cause some function keys, such as Page-up, Page-down, Insert, and Delete, to not send the expected codes to AMOS. If Metropolis function keys enabled is not desired, from the AMPCLiTE window *Select*>Setting> Keyboard> [Miscellaneous] and *uncheck* the Metropolis Function Keys option. Before saving this setting, modify the terminal emulator and *select* one desired from the list. Then this setup must be saved to disk. From the AMPCLiTE window for the session displayed, *Select*> Session> [Save As] and the <Save As> window will appear. With the mouse *select* the {SessionX.Aln }file and *double click*, *Select* the [YES] box with the mouse or *press* (**Enter**). Then the next time the system boots, the new settings will always be applied to that VTM session. If the settings are not saved, the defaults will be used.

As in any multi-tasking environment, be careful not to run conflicting tasks on multiple virtual terminals. For example, don't use one virtual terminal to run DSKANA to analyze the disk while another virtual terminal is editing a file on that disk, or you may damage one or more files.

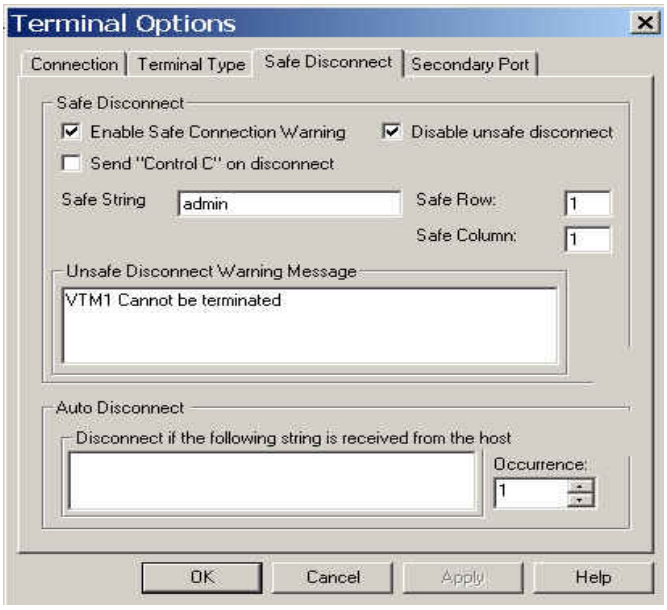
See Chapter 3 for more information on setting up virtual terminals and choosing the terminal emulations they use.

RE-STARTING A VTM SESSION

If the operator accidentally closes one of the virtual terminal sessions, what do you do? The operator can restart a closed virtual terminal session without rebooting the system. Follow this procedure:

In the <AMPCLiTE window>, *Select*> [Session], and a pop-down window should display 8 boxes. The second from the bottom will list all the SessionX.Aln or VTMx files in use or that have been used. Using the mouse, *Select* > [*Session1*], which was disconnected and *double click* to restart the VTM1 session. This should restart the session without having to reboot AMOS.

UNSAFE DISCONNECT



Some users may wish to enable the Unsafe Disconnect option of the terminal emulator. This will inhibit anyone from disconnecting the VTM1 terminal accidentally. Follow the procedure below to enable this feature for both terminal emulators.

To enable this feature from the AMPCLiTE window, *Select*> Settings> Terminal> [Safe Disconnect]

Then *check* the {Enable Safe Connection Warning}. Then *check* the {Disable unsafe disconnect}

For the {Safe String} *Enter (*admin*).*

For the Unsafe Disconnect Warning Message fill in
{VTM1 Cannot be terminated}.

Select> [OK]. Then *Select*> {Session} program option for the terminal emulator and Save Session1.Aln. This will write these settings to the disk.

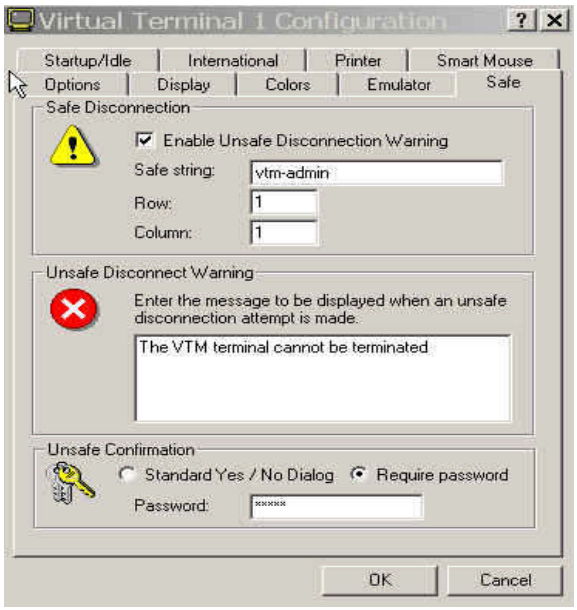
For further information on this Click on {Help} from the AMPCLiTE screen.

Figure 7-1: AMPCLiTE Enable Unsafe Disconnect

To enable this feature from the AMPCTerm window, *Select*> Configuration> [Safe] tab.

Then *check* the {Enable Unsafe Disconnection Warning} checkbox.

For the {Safe String} *Enter* (**vtm-admin**).



For the Unsafe Disconnect Warning message fill in {The VTM terminal cannot be terminated}.

Then *check* the {Require password}
Fill in a Password: {admin} for example.

Select> [OK]. This will save the new settings in Virtual terminal1.zsc

For further information select the {Help} from the terminal emulator window.

Figure 7-2: AMPCTerm Enable Unsafe Disconnect

ALTERNATE TERMINAL EMULATORS

The AMOS Servers are not limited to just one terminal emulator for the console. The VAR can install other terminal emulators in a separate directory named for the terminal emulator. AMOS will index the C:\AMPC\Install.CFG file to find which terminal emulator to use. If another terminal emulator needs special Fonts, these files should be installed into the "C:\Windows\Fonts" folder.

The terminal emulator AMPC directory organization should be as follows:

```
C:\AMPC\AMPCLite        ; contains Ampclite.exe and all supporting files.
C:\AMPC\AMPCTerm        ; contains AMPCTerm.exe and all supporting files.
C:\Program Files\UASystems\AlphaLan++9.0\ALAN.EXE /LOCAL %p ses7.aln
        ; contains Alan++ 9.0 and all supporting files.
```

The {C:\AMPC\Install.Cfg} file is shown below. We have modified the standard one showing how to add the 3rd terminal emulator package.

```
[Settings]
DefaultEmulator=AmpcLite
[TerminalEmulators]
Emu1 = AmpcLite    .\AmpcLite\AmpcLite.exe %p
Emu2 = AmpcTerm    .\AmpcTerm\AmpcTerm.exe %p %t
Emu3 = ALAN \Program Files\UASystems\AlphaLan++9.0\ALAN.EXE /LOCAL
%p ses7.aln
```

RESTARTING AMOS AFTER EXIT

During the initial boot of the Server Windows Professional starts up and will display a Desktop environment. To boot AMPC into AMOS select the "AMPC Boot" shortcut.

Once the terminal emulator starts, the Alpha Micro banner will appear on the screen, followed by the system initialization file. The last statement in the initialization file is `MEMORY 0`. The AMOS system prompt (usually a dot) will then display, allowing the user to Log onto AMOS.

An alternate method is to execute Boot Shortcuts in the AMPC folder. Alpha Micro has provided several different shortcuts. The two most commonly used are {**Configure AMPC**} and {**Boot AMPC**}. Their names describe what they do. The first will only bring up AMPC in configuration mode and not boot. This uses the /C switch in the target line of the shortcut properties. The system administrator uses this mode to build new **AMD** files, add serial devices, map SCSI or IDE devices, etc. The {Boot AMPC} shortcut will execute with AMPC.MON and AMPC.INI.

BOOT SHORTCUTS AND SPECIFIC INITIALIZATION FILES

To boot with a specific AMOS initialization file from the Windows environment, simply use the AMPC.EXE /L:FileName option by changing the shortcut properties to include the following line:

```
AMPC.EXE /L:Ini-file /M:AMPC.MON
```

Ini-file is the initialization file (e.g. TEST.INI or AMPC.INI) or other filename. You must specify the file extension. Refer to the appendix for sample INI files. The initialization file must exist in the C:\AMPC folder under Windows when using the /L switch.

{**AMSAFE.Boot**} shortcut will execute the AMSAFE.BOOT.MON and AMSAFE.BOOT.INI file. This is a minimal system configuration for trouble shooting the system if the current AMPC.INI has problems.

For Eagle 760 Servers we provide {**E18SIO Boot**} will initialize 18 PC serial ports. You can create your own by copying and renaming one of the provided shortcuts. Select the shortcut and right click and select properties. Then change the boot INI in the target line.

GENERAL HINTS & RESTRICTIONS

The following list contains miscellaneous items to watch out for, which may not be Eagle 760 specific:

- When working in the BIOS configuration, the flat panel screen may complain about the resolution and ask that you press buttons 1 & 2 to cancel the message. Buttons [1] and [2] are the first and fourth buttons from the left on the lower front of the flat panel.
- Serially connected PCs should always have the terminal emulator (ZTERM, AlphaLAN, etc.) running. (It should be in the PC's Start folder.) If the PC is powered on, but the terminal emulator is not running, it will signal the AMOS system to hold terminal output. In some cases this can (on any AMOS system) cause the boot or other processes to hang.
- The PARITY program is no longer supported because it was a hardware specific program.

- If the CMOS setup is configured to boot a RAID subsystem as the primary boot device, the RAID must be turned on. The RAID must finish the internal self-test and memory test before the AMOS Server will boot.
- Do not map your NTFS formatted SCSI Drive ID=0 on the Eagle 760 or the NTFS formatted IDE disk drive 0 to an AMOS disk device. This will corrupt the data on the drive and make the system not bootable.
- Always keep the system folders as NOT SHARED, which will keep viruses off the system. The only port that is shareable is the printer port.
- Level7 uses virtual console terminal 1 and cannot be used over a modem.
- Booting from tape is not supported. Booting a WRMGEN monitor is not supported. These are erased from the system with the ERAS70.DO file in the OPR: account.
- Alternate booting is handled with multiple **AMD** disk files in any AMPC folder on any disk drive. To access these files place the DSK device name in the device column on the AMOS disk tab option of the Configuration program. Save these settings. See Chapter 3.
- DCACHE should not be used with **AMD** disk files but should be used with AMOS Formatted SCSI disks. Using DCACHE with AMOS formatted devices improves disk performance. Using DCACHE with **AMD** disk files, which are already cached by Windows, degrades performance. If both device types are installed, use the SET NOCACHE dev: for the **AMD** disk files. Place a line for each **AMD** file in the AMPC.INI.
- There is no hardware status display. Status display numbers are shown in the system diagnostic window.
- The following have not been tried and functionality is unknown:
    - AMIGOS, OSEXEC, FORTRAN, PASCAL, COBOL, RJE
- The Eagle 760's parallel port is not interrupt driven. Using it may degrade system speed.
- If upgrading from a system with two 2GB disks, DSK0: to 4 and DSK5: to -9: *Create* one 4GB **AMD** "pseudo AMOS disk" with a 10 logical split, giving DSK0: to 9: All of your software will work just the same.
- When 2 GB of memory or larger is installed on the Eagle 760, only 760MB is actually usable by AMOS. This is a restriction of Windows. Since 760MB is larger than the capacity of any previous AMOS system, this should not be a problem. Windows uses the extra memory for a disk cache buffer and the Windows Swap File. We recommend a maximum of 512 MB for AMOS 8.x on AMPC systems.
- When using the DVD-RAM drive with MAKDVD or DVD programs, do not eject the media before executing a **DVD/U** to un-mount the media. Additionally, make sure that you are not logged into any DVD disk device when un-mounting the DVD-media. The job will be frozen {not able to log out} until the original DVD media is installed and mounted.
- VersiCOMM considerations: When using TRANS or RETRV with AMOS 8.0 on the remote system, use the /NOHOG switch.

- Within COMM, make sure JWAIT (upper right) is ON and that FLOW HW ON. Usually, this is handled in the TALK.INI with $FLOW ON and $JWAIT.
- With respect to AUTOLOG: "SLAVE.LIT" currently only works correctly on the PC-COM serial ports.
- Within AUTLOG, be sure to SET FLOW RTS as RTS/CTS hardware flow control is required for reliable behavior. Make sure the cabling supports the flow control signals.
- When MONTSTing, you may notice that the MONTST arguments get TODOS-ed to Windows. This provides backup copies and maintains consistency. When modifying the AMPC.INI file, always MONTST (or TODOS the INI) to update the Windows copy, especially the AMPC.INI, which is used by AMPC.EXE on the first boot.
- The MONTST procedure always transfers using the AMOS file name (6.3 format). Alpha Micro has provided backup copies of the original AMPC.MON. There is an AMSAFE.BOOT.MON and AMSafeBoot.INI in the AMPC folder as an emergency backup should the AMPC.INI accidentally be erased. This allows the Server to boot and allows the user to TODOS the working AMPC.INI file.
- Never un-plug the USB-SSD device, it will shutdown AMPC 7.1 if this happens. The security device must always be plugged into the system.

The system is looking for a DHCP Server on the network, which does not exist. On the primary physical Ethernet interface, there are two systems: AMOS and Windows. Without a DHCP Server on the network, Windows will hang the AMPC.EXE boot.

In the standard system configuration, the Windows's "Network Connection" is set to "Obtain an IP address automatically".

AMOS and Viruses

AMOS 8.x uses Microsoft's Windows 7 operating system for many supporting services, including low level networking. Previous versions of AMOS have been immune to network related viruses. We now recommend that Microsoft Security Essentials be the minimum installed on your system.

Many VARs have inquired as to whether AMOS 8.x is now subject to certain virus risks using Microsoft software. The answer is a simple one: Keep the configuration a purely AMOS system, and AMOS 8.x remains as immune as all other AMOS systems have been.

Specifically, AMOS 8.x uses the same AlphaTCP as other AMOS systems. Any new network-related virus weakness depends upon the Microsoft features we install and activate. We only install and activate Microsoft Windows features needed to support AMOS 8.x. There is no Microsoft Web Server, no Microsoft E-mail, etc.

The WINDOWS firewall configuration

Windows includes a basic firewall. This firewall has no effect on AMOS 8.x network traffic but can be used to totally isolate the Windows from any network traffic. To block network viruses on the Windows environment, we now ship the AMOS Servers with the Windows Firewall enabled for all Ethernet Interfaces. We also disable the Microsoft File and Printer sharing. AMOS 8.x and AlphaTCP work fine without these services enabled. If the system administrator needs a particular function, we have described in Chapter 6 the procedures and ports that may be enabled by the system administrator.

Patches available from Microsoft

As patches are made available from Microsoft, we incorporate them into future builds. However, only a few even apply to the components we have installed. Because the Windows features are "locked down" at build time for each Server. The Eagle 760 system may be upgraded in the field by using the {Windows Update} link in the Start programs group.

How To Make AMOS Virus-Proof

Please keep all system folders set to “Not Shared” to keep viruses off the system. For systems manufactured after March 5, 2004, do nothing. For systems manufactured prior to March 5, 2004, make sure the Windows Firewall is fully enabled and neither local Windows paths nor local Windows printers are configured for Microsoft sharing. See chapter 6 for this procedure.

WINDOWS ADMINISTRATIVE UTILITIES

xAdmin utilities are now available on all systems. These AMOS utility programs provide quick shortcuts to Windows commands. The system administrator should be the only user to run these XCMDs. Most of these commands will only run on the VTMx terminals on the Console. Alpha Micro has installed a custom version of this software on Eagle 760 systems that is different than Eagle 800 systems. Some XCMDs must be run from the OPR: account, which can be password protected.

Most of these utilities are .DO files (and some BASIC programs), so feel free to create your own variations (with different names). Most of these commands include HELP files (HLP: *.HLP), and command /? will also provide help**.**

The xAdmin Utilities includes the following:

- ShutDn — Shuts down AMOS, and powers off the system
- GoDown — Does a MONTST and Shuts down the whole System
- xDir — Lists Windows files
- xDel — Deletes Windows files
- xRen — Renames Windows files.
- xIPcfg — Reports the Windows IP information
- xDisks — Accesses the Windows disk manager
- xPlore — Accesses the Windows Explorer
- xDot — Accesses the Windows command prompt
- xCP — Accesses the Windows Control Panel
- xCMD — Creates additional Windows routines
- xTasks — Accesses the Windows Task Manager
- xEdit — Edits Windows files with MSDOS Edit
- xNoteP — Edits Windows files using MS Notepad
- xAMD — Handle the .AMD configuration
- InitM.DSK — Initialize raw .AMD files (can only be used from OPR:)
- SysSN — Get the system type and serial number
- PDF — Using local .PDF files
- XCLRLG — Clear Windows log files and empty the Recycle Bin
- Xerror — Emails log files to support@alphamicro.com

Chapter 8 - Preventive Maintenance

The AMOS Server requires little care. However, preventive maintenance is an integral part of keeping any Server running at peak efficiency. To safeguard your investment, we recommend you establish a regular maintenance schedule for the system. Have your service technician check power supply voltages once a year to check the health of the system. Keep a record of the readings for future comparison. This can head off a power supply failure. Use the main board CMOS hardware monitor to find these readings. Each Server has the capability to display this information.

DVD MEDIA

In order to protect your data, the DVD media must be handled and cared for properly. Depending on the model of drive installed in the Server, the DVD drive can read and write standard CD media as well as DVD media. A CD-RW drive cannot read or write DVD media.

Here are some important hints to remember:

- The recording film of the DVD is under the top label. Never try to remove this label. If you do, you will destroy the DVD.
- Treat DVD media gently. Scratches, spills, and dirt and fingerprints can ruin them. Handle them by the edges. Do not flex this media, as that can cause various internal layers to start separating.
- Use a soft dry cloth to clean the disc. Do not use solvents. Always wipe from the hole to the edge
- Keep your DVD Media in a dust-free environment, like the jewel case or envelope to store them. This helps them stay clean.
- Avoid temperature extremes. Do not expose DVD-media to temperatures below 50 degrees Fahrenheit (10 degrees Celsius) or above 125 degrees Fahrenheit (52 degrees Celsius).
- Do not leave your DVD next to a window where radiant heat from direct sunlight can cook them. This will warp the plastic and destroy them.
- DVDs should be at about the same temperature as your computer.
- Only write on the top surface, and only with a Soft Felt Tip marker!

DVD-RAM OR BLU-RAY DRIVE

The Blu-ray or DVD-RAM drive tray needs to be kept clean of dirt and dust. Keep the tray closed when not changing media. Clean the tray with a soft dry cloth at least 4 times a year. Clean the face of the drive with a damp cloth to remove dirt from the door and eject button.

CARE OF STREAMING TAPE CARTRIDGES

A cartridge tape can store data from an entire disk, so it is worth taking care of properly. Here are a few tips to follow:

- Store cartridges with the write-protect switch in the SAFE position.
- Store cartridges on their edges, not laying flat. Storing cartridges flat can cause the tape to slip down on the hub and damage the tape edge.
- Keep magnets away from your tapes. Even weak magnets such as those in paper clip holders can erase data on a cartridge tape.
- Don't expose tapes to very high or low humidity (more than 80% or less than 20%).
- Cartridge tapes should be acclimated to computer-room temperature and humidity conditions before use. If the tape has been stored away from the computer, it should be returned to the computer environment at least eight hours before use. If it has been in a different environment for less than eight hours, it should be kept in the computer location for at least as many hours as it was away from it.

¼" STREAMING TAPE DRIVE CLEANING

It is important to clean the read/write head of your tape drive periodically. We recommend that you clean the drive every 100 hours of use. We also suggest that you clean the drive after using a new tape for the first time, and that you do a complete tape wind/rewind after cleaning. Clean the face of the drive with a damp cloth to remove dirt from the door and eject button.

When you need to clean your tape drive, use only a cleaning cartridge designed for your particular drive type. One is available from Alpha Micro, part number PRA-00229-00. Follow the instructions on the cleaning cartridge.

MAIN ENCLOSURE (STANDARD PEDESTAL STYLE)

The Eagle 760 main enclosures are sturdy, painted sheet metal and plastic. Clean them as you would any other painted surface, using a gentle detergent on a damp soft cloth. Remember, however, that if any liquid makes its way inside the enclosure, severe damage to the computer could result. So, a light dusting is the safest cleaning procedure, and probably all the main enclosure will require.

Chapter 9 - Status Display Codes

When the Server boots, a series of codes appears in succession in the System Diagnostics display window. This information is presented here for the System Administrator's use. The diagnostic window has more information than the 2-digit display on previous Alpha Micro systems. If an error occurs during booting, it will display in Red, and a text description may follow. Normal AM-113-40 status codes are displayed in Magenta.

[AMOS Status Display: XX] Any program that writes to the FE00 status display has this message. This is displayed in Orange.

The older status codes that are active in AMOS 8.x are documented here. The status code is indexed on the left with **[xx]** double braces, and a description follows. Different programs in the system can also display a status.

Table 9-1: Diagnostic Display Status Codes

AMPC AND RELATED PROGRAM - STATUS CODES

[01]	Start AMPC.MON
[04]	AMPC.Mon: Ran out of queue blocks!
[09]	AMPC.Mon: Memory parity error
[10]	The (.IDV) was not found in account [1,6] on the boot device.
[11]	The (.TDV) was not found in account [1,6] on the boot device.
[12]	AMOS (.INI) file not found in account [1,4] on the first logical of the boot device.
[22]	AMPC.MON: DIRREE: CHKUPD SMEM block added!
[88]	Unimplemented SVCA call
[90]	TRMICP: Input buffer (1023) Overflow!
[BB]	Diagnostic TEST
[C1]	Parity error
[C2]	Parity error.
[EE]	PCNDV.NDV: Invalid socket # in Ethernet port
[EF]	Supervisor Stack is 83.3% used!
[B0]	ACE.DVR: No channel control block index!
[B0]	ACESIO.DVR: Unassigned channel packet received!
[EE]	Invalid socket # in Ethernet port from PCNDV.NDV

AM-113-XX BOOT ROM CODES

[33]	Controller boot ROM started, after being reset.
[B1]	Reading the EAMOS.MON from disk and loading into the AM-113 board. An error at this point indicates the file may not exist. (Data that was backed up is not guaranteed!)
[B2]	Reading the EAMOS.INI from disk and loading into the AM-113 board. An error at this point indicates the INI file is missing.
[B4]	Started booting EAMOS
[C5]	Do you want to enter CMOS setup? You have three seconds to press the ESC key on the terminal attached to port 0 of the AM-113-xx board. The terminal must be set at 19200 baud.
[CC]	The AM-113 board detected a CMOS checksum error.
[CE]	CMOS parameter - Checksum Error. This code will flash on the optional status display for several seconds while the board reinitializes the CMOS parameters.

AM-113-XX CONTROLLER DIAGNOSTIC CODES

[00]	AM-113 controller normal and running
[01]	Start EAMOS.Mon
[02]	Blinks between 2 and 0, watch dog reset is functioning.
[03]	Watch Dog reset deactivated.
[04]	EAMOS- Ran out of Queue blocks
[08]	EAMOS- Front panel power failure status
[09]	EAMOS- Memory parity error
[0F]	EAMOS- Controller is clearing memory during boot.
[10]	AMSIO.LIT – Interface driver not found!
[11]	AMSIO.LIT – Terminal driver not found!
[12]	EAMOS *.INI file was not found!
[10]	SIOx.IDV - Type code not supported!
[15]	SIOx.IDV - Bad packet.
[16]	SIOx.IDV - Bad TCB packet.
[17]	SIOx.IDV - No TCB index
[1A]	Novram.sys says SSD passed security, SSD now available.
[22]	EAMOS- DIRREE: CHKUPD SMEM block added!
[33]	Unimplemented EA
[34]	Unimplemented Integer
[40]	Security failure
[41]	Security failure
[42]	Security failure
[43]	Security failure
[44]	Security failure
[45]	Security failure
[46]	Security failure
[62]	Power Failure
[66]	Mount DSK0:

[67]	Loading Novram.Sys
[68]	Novram.Sys initialized
[88]	Unimplemented SVCA call
[89]	Floating point emulation.
[B0]	Replace Batteries!
[B1]	Data that was backed up is not guaranteed!
[BB]	Diagnostic test.
[D0]	6242 Clock calendar chip failed!
[DE]	The DEAD error.
[AD]	The DEAD error meaning the Serial I/O subsystem has no power. Please turn it on.
[E2]	Next byte will be displayed!
[EF]	Supervisor Stack is 83.3% used!
[F0]	Bus error
[F1]	Start of Word Display! / Address error
[F6]	Privilege violation
[FE]	Start of Long Word Display!
[FF]	Next byte will be displayed!

[AM113-40 terminal 1 has been initialized] Any serial port controlled by the AM-113 board has this message.

AMPC DIAGNOSTIC COMMANDS

There are a few AMPC Diagnostics commands, which are helpful in troubleshooting a system problem. To execute the command, select the AMPC Diagnostic window and type on the console keyboard the command and an Input box will be displayed with the command and press (Enter). The following list shows some of the most used commands. Some of the responses will be displayed in the bottom status line of Diagnostic Window or will open a new display window.

`LE`	List the errors into the Test error log.
`Float`	The Float command will toggle between the traditional Floating-point emulation method and the new native code.

Chapter 10 - TODOS and FMDOS

HOW TO COPY FILES BETWEEN OPERATING SYSTEMS

The next section gives some general information about copying files, then specific instructions on using FMDOS and TODOS. Later in the chapter describes how you can copy AMOS files from the Server to other computers. To use these commands, you must be at the AMOS prompt. The command names reflect the action taken. To send files from AMOS to Windows or receive files from Windows into AMOS, the following AMOS commands are used.

- **TODOS** to copy files from AMOS to Windows
- **FMDOS** to copy files from Windows to AMOS

These utilities only support file names containing eight characters and a three-character extension. They do not support long file names.

When using one of these commands, the file is not changed. A copy of the file is moved to the other operating system, and the original file remains where it was.

Contiguous File Transfer

Every file on the system consists of a series of blocks on the disk. AMOS supports two file types: linked or sequential access files, and contiguous or random access files. A contiguous file has all of its disk blocks in adjacent order on the disk, while a linked file's blocks are in various locations on the disk.

Windows does not support contiguous files. When transferring a contiguous file from AMOS to Windows, the file is converted to a linked file. If you transfer such a file back to AMOS, use FMDOS /R—for random access—to convert it back into a contiguous file.

Preparing to Copy

TODOS and FMDOS allow you to specify the Windows directory and AMOS disk account for the source and destination files. Make sure you know what Windows directory the files will end up in. While normally, this is the C:\AMPC folder, always use full paths, such as **`C:\AMPC\file`** to be sure. To use these programs, LOG into the correct [P,PN] account before executing the command. (While in single-user mode, you are usually in the default directory. However, various other tasks undertaken by other AMOS jobs can cause AMPC.EXE to change paths.)

If you are not careful about the directory and disk account, you may accidentally copy the files to the wrong location. If this happens, it will cause you extra work to get the files to the proper location. The worst problem would be to copy over existing files, erasing needed data.

Command Formats

Both AMOS and Windows command syntax work with both TODOS and FMDOS. Use whichever you're more comfortable with. The general syntax for AMOS commands is:

```
Command Destination=Source{ /option}
```

Windows command syntax has the general format:

```
Command Source Destination{ /option}
```

The source and destination file specifications are in opposite order in AMOS and Windows. When separating the file specifications with a space, AMOS interprets the command according to Windows /DOS syntax; when using an equal sign, AMOS 8.x uses the AMOS syntax. Whichever syntax used, be sure to put the file specifications in the right order or you could copy the wrong file, and possibly erase data you wanted. (Most AMOS commands ignore spaces before and after an "=" sign. This one does not!)

The options at the end of the FMDOS command line in either Windows or AMOS format allows optional command features. The options for FMDOS are described in the FMDOS section. NOTE: Place a space before any option.

AMOS AND WINDOWS FILE NAMES

Windows file names may be very long, but AMOS file names cannot be longer than six characters. Take this difference into account when using FMDOS to copy files from Windows to AMOS. Either assign a new name to the file copied or FMDOS will automatically truncate the names to six characters.

When a file name is truncated, the three-character extension, which follows the file name in both Windows and AMOS, is not affected.

WILDCARDS

TODOS allows the use of ' *' and '?' Wildcards as part of the file name and extension in the Windows and AMOS file specifications. FMDOS allow the use of these characters only in the Windows specification. The ' * ' replaces any number of characters in the file name or extension. The '?' stands for any one character. Wildcards are not allowed in the Windows directory or AMOS device specification, but you can use wildcards in the AMOS account specification (e.g.: [100,*] represents all disk accounts in project 100). For example:

`TODOS C:\USER\*.* = *.TXT[23,*]` ENTER

Transfers all AMOS .TXT files in the accounts in project 23 on the current disk device to the Windows directory C:\USER using the AMOS file names. For more information on the use of wildcards in AMOS file specifications, see the *AMOS User's Guid*e.

SENDING FILES TO WINDOWS FROM AMOS (TODOS)

TODOS copies files from AMOS to Windows. Use either of these formats for TODOS:

```
TODOS {Windows-pathname}=amos-filespec{,amos-filespec,...}
```

or:

```
TODOS amos-filespec{,amos-filespec,...} {Windows-pathname}
```

amos-filespec is the name of the file to be copied to Windows. Leaving out part or all of the file specification, it defaults to the current disk and account, and all files. As shown, multiple specifications can be entered separating them with commas.

The optional ***Windows-pathname*** is the file name and directory to copy the file to. The default is the C:\AMPC directory, because this is where AMOS 8.x boots from.

TODOS understands only Windows 8.3 file names, not long file names. The destination file name entered must be eight characters or less with a three or less character extension.

If the destination file already exists in the Windows folder, TODOS overwrites it with the file being copied. Be careful not to accidentally overwrite existing files when using TODOS.

Here are a few examples of TODOS:

To send a file from the current AMOS account to the C:\AMPC folder, and renaming is not needed, enter only the AMOS file name:

TODOS PAYROL.DAT ENTER

To send the file to another directory, and give the file a different name on the Windows side, specify something like this:

TODOS C:\USER\ONETEST.TXT=ONE.TXT ENTER

This example transfers the AMOS file ONE.TXT to Windows with the file name ONETEST.TXT in the directory C:\USER. The C:\USER folder must already exist; TODOS can't create a new directory. If ONETEST.TXT already exists in C:\USER, TODOS overwrites it automatically.

Finally, if the file is not in the current AMOS account, you need to use the complete syntax:

TODOS C:\USER\ONETEST.TXT=DSK2:ONE.TXT[23,4] ENTER

If the file is on the current disk, include just the account number and leave out the device name.
If you are more familiar with Windows syntax, use it instead. The last sample command would then be:

TODOS DSK2:ONE.TXT[23,4] C:\USER\ONETEST.TXT ENTER

RECEIVING FILES FROM WINDOWS INTO AMOS (FMDOS)

The FMDOS command will copy Windows files to AMOS. Use either of these formats:

```
FMDOS {amos-filespec}=Windows-pathname{ /options}
```

This example transfers the AMOS file ONE.TXT to Windows with the file name ONETEST.TXT in the directory C:\USER. C:\USER folder must already exist; TODOS can't create a new directory. If ONETEST.TXT already exists in C:\USER, TODOS overwrites it automatically.

or: FMDOS Windows-pathname {amos-filespec}{ /options}

The ***Windows-pathname*** is the name and directory of the file being copied to AMOS. The default is the device and directory the user is logged into.

FMDOS understands only Windows eight-character file names, not long file names. To copy a file with a long file name to AMOS, either use the Windows version of the name (generally ending with ~1) or change the file name in Windows before using FMDOS. XDIR {Windows pathname} will display both the eight character file names and the long file names.

The optional ***amos-filespec*** is the disk account and file name being copied to. It defaults to the current account and the same name as the Windows file. If the Windows file name has more than six characters refer to the information below for help.

If the destination file already exists, FMDOS copies over it unless the /NOD switch is included. The /NOD switch is described below.

The AMOS account where you want to put the file must already exist—FMDOS cannot create accounts.

The ***options*** let you choose various FMDOS features. Please Note: Place a space before the / that precedes the option. Using any combination of the available options:

/NOD	If an AMOS file exists with same name as the file being copied, do not delete it. FMDOS overwrites the destination file name, if the /NOD switch is left off.
/R	Make the AMOS file a random access (contiguous) file. This specifies how the file is arranged on the disk. See the section "Contiguous File Transfer" earlier in this chapter.

To transfer a file from the C:\AMPC directory into the current AMOS account, and renaming is not necessary, specify just the Windows file name:

If the "`Protection violation`" error message appears, the user is not logged into [1,2] during the copy to another account. Here are some examples of FMDOS:

`FMDOS PAYROL.DAT` ENTER

To copy a file from a different Windows directory to another AMOS account, or give the file a different name, specify something like this:

```
FMDOS ONE.TXT[23,4]=C:\USER\ONETEST.TXT ENTER
```

This example copies the Windows file ONETEST.TXT from the C:\USER directory to the file ONE.TXT in account [23,4]. If the destination file already exists, FMDOS overwrites it.

If you are more familiar with Windows command syntax, use it. For example, enter the previous command as:

```
FMDOS C:\USER\ONETEST.TXT ONE.TXT[23,4] ENTER
```

FMDOS automatically truncates file names when copying Windows files to AMOS if they are longer than six characters, so let FMDOS shorten the file name for you instead of specifying a destination file:

```
FMDOS [23,4]=NEWSYSTM.TXT ENTER
```

This syntax creates the AMOS file NEWSYS.TXT.

COPYING FILES TO ANOTHER PC COMPUTER

To copy AMOS files to another PC, copy the AMOS files to the Windows partition with the TODOS command. Then copy the files over the network to move them to the other PC.

COPYING FILES TO OTHER ALPHA MICRO COMPUTERS

One way to copy files from computer to computer is to use the AlphaTCP File Transfer Protocol (FTP) across the network. This software must be installed on both computers. See the *AlphaTCP User's Guide* and *AlphaTCP Administrator's Guide* for more information on this protocol.

If the Server has a SCSI tape drive installed, the easiest way to copy files to or from other non-networked AMOS computers is by using the MTUSAV and MTURES commands. See the *AMOS System Commands Reference Manual* for information on these commands

Appendix A - Connector Configurations

The types and number of connectors found on the rear panel of the Eagle 760 will vary, depending on the hardware configuration ordered. See Figure 2-2 & 2-4 for the position of these connectors on the Server's rear panel.

SERIAL I/O CONNECTORS

The Eagle 760 Servers are equipped with 1 PC COM port. Using the DWB-10317-30 modular adapter makes these ports look just like an AM-359 serial port. The system may also be equipped with the PCI 4 or 8-port PC COM port interface and Octopus cable supplied with male DB9 connectors.

The USB 8-port serial interface also can be used with the Eagle 760 Servers. The USB box has a 4-conductor USB cable. The flat end connector is plugged into the Server rear panel USB port. The square connector is plugged into the USB box. The USB cable supplies 5V power and high-speed data.
All the PC-COM options can use DWB-10317-30 modular adapters for each DB9 port to make the external cabling compatible with AM-359 style connector pin outs.

What Is RS-232?

All AMOS Servers support RS-232. RS-232 is the name of a standard developed by the Electronic Industry Association (EIA) to encourage standardized interfacing of devices to computer systems. The letters RS stand for Recommended Standard. The RS-232 interface standard specifies electrical signal characteristics and names, and defines the functions of the signal and control lines that make up the interface.

Basically, implementing this standard involves assigning standardized signal definitions for the various pins of the RS-232 connector at either end of the terminal or printer cables. For example, the wire attached to Pin #2 carries the signal interpreted on the computer end as "Input Data from the Terminal" and on the terminal end as "Transmit Data To Computer." You enable these specific signals by attaching cable wires to certain connector pins. If a terminal or printer manufacturer says their device is RS-232 or RS-232C compatible, it will probably be easy for you to connect it to your Alpha Micro Servers.

Before constructing the cable to connect a printer or terminal to the Alpha Micro Server, consult the manufacturer's manual accompanying the device. It should describe how to wire the connector on the device end. Few devices use all of the defined signals. In most cases, you need to connect about four pins. Although printer cables are sometimes a little more complicated on the printer end, terminal cables are often the same on both computer and terminal ends.

Alpha Micro uses RJ-45 connectors for RS-232 device connection. The maximum length of RS-232 cables is ***150 feet*** between devices when using Twisted Paired Level 3 CMP cabling.

Important Note

The Federal Communications Commission (FCC) has established rules regarding allowable emission levels of Class **A** computing devices (ref: Subpart J of Part 15 of FCC Rules). The Alpha Micro systems to which this manual applies have been determined to be in compliance with the FCC rules. However, you should be aware that if other devices, such as terminals and printers, are attached to these systems, even if the devices are attached in accordance with the instructions contained in this manual, the resulting configuration may not be in compliance with the referenced FCC rules. Corrective measures, if any are required, are the responsibility of the user. Information on emission levels of peripheral devices should be obtained from the manufacturer of the device.

CABLE CONSTRUCTION GUIDELINES

To construct your own cables, there are a few things to keep in mind before installing a cabling system: Most modern installations are wired for networking. This same cabling system may be used for RS-232 communication. Just the termination of the circuit must not go into Ethernet switches or hubs. Parallel patch cords from the cabling system patch panel connect the serial I/O ports of the Server and then to the remote serial device. The wall plates at the work station locations will have a parallel patch cord to a modular adapter pined out for the serial devices I/O connector. All serial diagrams in this appendix refer to the RJ-45 pin-outs and twisted pair numbering. The high-speed serial lines TX data and RX data must **never** be in the same twisted pair. The RXD is paired with a low speed signal RTS. The TXD signal is paired with DTR. Engineering has tested this cable design scheme up to 300 feet with no transmission or cross talk problems with Level 5 cables.

Cable Length

When using twisted paired shielded cable you may increase the length to 150 feet, using Level 3 or Level 5 Twisted paired cable for RS-232 connections. The premises circuits should all be parallel circuits. Here are some things you can do if the cables absolutely must be longer than what is specified:

1. Signal conditioning equipment (for example, a "short haul modem") can improve signal quality.
2. Use Eagle 450TX terminal Servers to connect RS232 devices.
3. Convert the device to Ethernet and Telnet into the Host Server.
4. For reliability reasons, do not allow PC COM ports to drive cables longer than 100 feet.

Cable Type

We recommend that you use a twisted paired shielded jacketed cable. The cable should be rated at least CMP Level 3, but you can use CMP Level 5 cable for lines longer than 150 feet. Most cities require that any low voltage communication cable have a CMP, Communication cable Plenum rating. This type of cable should comply with your local fire codes for installation in your facility. Using a high quality twisted paired; overall shielded cable helps minimize electromagnetic interference. Reducing this interference protects the Server from signal noise. It also protects other devices around the Alpha Micro Server (such as a TV or radio) from interference radiated by an improperly shielded system.

Except for the PC COM ports and PC serial port adapters, the AMOS RJ-45 serial ports have a shield ground connection at pin 1. The AM-359 cable adapters and assemblies have the shield ground

connection to pin 1. These pre-made cable assemblies are available from Alpha Micro and their part numbers and details are documented in the AM-359 product installation instructions. For pin out and cable construction information, refer to *AM-359 8-Port Serial I/O Installation Instructions*, PDI-00359-00.

SERIAL ADAPTERS

PC-COM Port RS-232 DB-9 Connector Signals

For standard PC COM Ports or octopus cable set on PCI Serial interfaces, use the modular adapter below to convert from the Male DB-9 to an RJ-45 pin out that has the same signal pairing as the AM-359 ports that Alpha Micro has historically used. The only difference is RJ45 pin 1 is not connected to any pin in the DB9. This cabling system uses twisted pair parallel patch cords between the Server end and the peripheral device. The following table shows the signal-to-pin orientation applicable to each standard DB-9 serial I/O connector.

Server End	**FDB9**		**RJ-45-pin**	
Signal	**Pin #**	**Direction**	**Pin #**	**Color**
RXD	2	< -- <	5	Grn
RTS	7	> -- >	4	Red
TXD	3	> -- >	3	Blk
DTR	4	> -- >	6	Yel
GND	5	< -- <	7	Brn
CTS	8	←+ -- <	2	Org
DCD	1	<-+	Tie 8 ,6,1	
DSR	6	<-+		

Table A-1: PC COM port MDB-9 Modular adapter connector Signals (DWB-10317-30)

Do not drive devices on PC COM ports longer than 100 feet. Some COM ports do not drive the cable with full +12 volts. Some COM ports only output +9V, which can cause reliability problems.

RS-232 DB-25 Terminal or Printer Adapters

This section documents the signal to pin definition of a standard DB25 modular adapter to allow connection with terminals and printers supported by Alpha Micro. We have grouped the signals into pairs, which will also allow longer and more reliable communication to the Server. The AM-60, AM-62,

-62A, -65, -65A, -70, -72, and AM-75 terminals are all RS-232 devices and use the same cabling pin outs. The patch cords used should be internally twisted-pair cable with RJ-45 connectors on both ends. The pin assignments are straight through (pin-for-pin) with no swapped ends.

Server End	RJ45		M-DB-25 modular adapter		Terminal
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Signal**
RXD	5	< -- <	2	Grn	TXD
RTS	4	> -- >	5	Red	CTS
TXD	3	> -- >	3	Blk	RXD
DTR	6	> -- >	8	Yel	DCD
CTS	2	< -- <	20	Org	DTR
GND	7	< -- <	7	Brn	GND
DCD	8	< -- <	4	Wht	RTS
DSR	1	< -- <	6	Blu	DSR

Table A-3: Serial Terminal Connector Signals

The terminal DTR signal (pin 20) is connected to the Server CTS signal (RJ45 pin 2) and serves as 'READY/NOT BUSY' handshake line to prevent 'overrunning' the terminal with data. This protocol is also effective for many printers used by Alpha Micro.

Caution: While this cable configuration enhances the use of the Alpha Micro terminals, it may not work with certain printers if they do not provide a compatible DTR on pin 20. In such cases, consult the manufacturer of the device to find if they moved the NOT READY or Busy signal to Pin 11 or possibly 19.

Serial Modem Modular Adapter

To attach a serial modem to our defined cabling system, use a parallel twisted paired patch cord to connect any serial port on the AMOS Servers. This adapter will handle just about any modem connected to either the RJ-45 serial ports or the PC COM ports. The data signals are Modem TXD out to Server RXD in. Server TXD data out, to Modem RXD in. Flow control is handled by RTS-CTS connections. Server (hang-up) Modem control is DTR out to DTR input on the modem. Modem status output DCD to DCD input on the Server.

Server End	RJ45		M-DB-25 modular adapter		Modem
Signal	**Pin #**	**Direction**	**Pin #**	**Color**	**Signal**
RXD	5	< -- <	3	Grn	TXD
RTS	4	> -- >	4	Red	CTS
TXD	3	> -- >	2	Blk	RXD
DTR	6	> -- >	20	Yel	DTR
CTS	2	< -- <	5	Org	RTS
GND	7	< -- <	7	Brn	GND
DCD	8	< -- <	8	Wht	DCD
DSR	1	< -- <	6	Blu	DSR

Table A-4: Serial modem modular adapter

Workstation Modular Adapters

For RJ-45 connectors, use the standard parallel RJ-45 patch cords to mate to the modular adapters defined below. Female DB-9 connectors plug into the remote PC/AT serial port.

Workstation Serial I/O Port (Female DB-9)			Server End FDB-9 Connector	
SIGNAL	**PIN #**	**DIRECTION**	**PIN #**	**SIGNAL**
TXD	3	> -- >	2	RXD
CTS	8	< -+ <	7	RTS
DSR	6	< - +		
DCD	1	< - +		
RXD	2	< -- <	3	TXD
RTS	7	> -- >	8	CTS
GND	5	< -- <	5	GND

Note: Pins 1, 6 and 8 on the workstation connector are jumpered together.

Table A-5: Pin out for Workstation to Computer Cable - IBM PC/AT and Compatibles

Workstation Serial I/O Port (Male DB-25)			**Server End FDB-9 Connector**	
SIGNAL	**PIN #**	**DIRECTION**	**PIN #**	**SIGNAL**
TXD	2	> -- >	2	RXD
CTS	5	< -+ <	7	RTS
DSR	6	< -+		
DCD	8	< -+		
RXD	3	< -- <	3	TXD
RTS	4	> -- >	8	CTS
GND	7	< -- <	5	GND

Note: Pins 5, 6 and 8 on the workstation connector are jumpered together.

Table A-6: Pin out for Workstation to Computer Cable - IBM PC/XT and Compatibles

INDUSTRY STANDARD DEVICES

The industry standard devices on every Eagle 760 Server are:

- VGA Video Connector (15-pin).
- PS2 style Mouse
- PS2 style PC keyboard
- USB ports
- Ethernet Network cables

PARALLEL PRINTER PORT

Eagle 760 Servers have one parallel port. The parallel port supports the industry standard Centronics interface. The signal pin outs for the parallel ports are as follows:

To insure the reliability and performance of your parallel ports, avoid using parallel printer cables longer than **six feet.**

PIN #	SIGNAL NAME
1	Data strobe
2	Data 1
3	Data 2
4	Data 3
5	Data 4
6	Data 5
7	Data 6
8	Data 7
9	Data 8
10	Acknowledge
11	Busy
12	Paper error
13	Select
14	Auto line-feed (not used)
15	Error
16	Printer reset
17	Select in
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground

Table A-7: Centronics Interface Cabling Signal Pin out

Appendix B - The Control Characters

The terminal keyboard allows you to type control characters, which perform special functions. A control character is the signal transmitted to the computer when you hold down the CTRL key and press another key at the same time. The following list contains the most important control characters. The *AMOS User's Guide* contains a complete list of control characters and their functions.

Control-C

Control-C is the system interrupt command. You use it to interrupt whatever program is in progress and return to AMOS command level. After pressing CTRL/C to interrupt a program, you cannot resume execution of that program; you must start it over from the beginning.

Some programs, such as AlphaVUE, do not recognize a Control-C as an exit command; instead you must use the exit command for that program if you want to return to AMOS command level.

Other programs do recognize a Control-C; however, if an exit command exists for a program, it is usually better to use that command than to press CTRL/C. Many programs perform various closing functions when you use their normal exit commands and would not have a chance to perform those procedures for an orderly exit if you bypass them by using a Control-C.

Control-U

At AMOS command level, you may move to the leftmost character of the command line you are typing by pressing CTRL/U.

Control-S

A program or command often displays more data on your terminal than fits on one screen. To stop the screen display, press CTRL/S.

You can now read the data on the screen at your leisure. Not only does the display freeze, but AMOS actually stops sending data to your terminal until you press CTRL/Q (see below); at that point, AMOS resumes sending information where it left off.

While a Control-S is in effect, AMOS stores, but does not act upon, anything you type except for CTRL/Q. There is, however, a limit to how much can be stored. The exact number of characters depends upon your initial system setup.

Control-Q

When you press CTRL/S (described above) to freeze the screen display, you must press CTRL/Q to resume the screen display. If you have typed anything while the Control-S was in effect, a Control-Q tells AMOS it can now go ahead and act upon that input.

Try this: Press CTRL/S, then type DIR RETURN, and then PRINT RETURN. The commands aren't displayed on the screen and it appears that nothing happened. Now press CTRL/Q to release the display, and you see first a list of the files in your account printed on the screen, then a display of the files waiting to print.

Control-R

The command buffer is an area of memory where the computer stores commands that have been entered. Pressing CTRL/R shows you what commands are in your command buffer.

If the line editor is installed on your computer, you can use CTRL/R to call up previous command lines, make changes to them, and then submit them again. This is a great convenience if you want to enter a series of similar commands; you can just keep making minor changes to one command, and reusing it.

Appendix C - Console Function Keys Under AMOS

Many Alpha Micro software packages, such as AlphaWRITE and AlphaCALC, contain function key translation files that let you use the function keys on your terminal to perform actions while using the software. For example, when using AlphaWRITE on an AM-65 terminal, pressing F13 at your document display takes you to the Editing Menu.

Each software package has a separate translation table file for each Alpha Micro terminal driver (AM62.TDV, AM65.TDV, and so on).

When using AlphaWRITE, using the function keys may insert spaces. To avoid this, be sure to set ACKWAIT=TRUE in your AlphaWRITE initialization file.

Unless you are using the AM-70 or WYCOL emulation, the correct translation table for the Console's function keys is the same as the translation table for an AM-62A terminal.

USING FUNCTION KEYS

Both the AM-62A and AM-65 terminals have sixteen function keys. However, most PCs keyboard has twelve. To make up for the "missing" function keys, the PC keyboard uses the CTRL and ALT keys.

AMOS 8.x uses the same function key translation as other popular Alpha Micro communications products, such as *in*Sight and AlphaLAN, except that function keys F11 and F12 are also used.

The following keys (or combinations of keys) on the PC keyboard correspond to the sixteen function keys—and some other keys many PC keyboards lack—on an Alpha Micro keyboard:

AMOS FUNCTION KEY TRANSLATION

AMOS Function Key	PC Key
FUNCT	ALT (For example, for FUNCT/1, press ALT/1)
F1 to F10	F1 to F10
F11 and F12	F11 and F12 or CTRL/F1 and CTRL/F2
F13 to F16	CTRL/F3 to CTRL/F6
SHIFT/F1 to SHIFT/F10	SHIFT/F1 to SHIFT/F10
SHIFT/F11 and SHIFT/F12	SHIFT/F11 and SHIFT/F12 or SHIFT/CTRL/F1 and SHIFT/CTRL/F2
SHIFT/F13 to SHIFT/F16	SHIFT/CTRL/F3 to SHIFT/CTRL/F6
HELP and SHIFT/HELP	CTRL/F7
EXEC	CTRL/F8
NEWLINE and SHIFT/NEWLINE	CTRL/F9
CANCEL and SHIFT/CANCEL	CTRL/F10
INS CHAR	INSERT
INS WORD	SHIFT/INSERT
INS LINE	CTRL/INSERT or CTRL/PAGE UP
DEL CHAR	DELETE
DEL WORD	SHIFT/DELETE
DEL LINE	CTRL/DELETE or CTRL/PAGE UP
PREV SCREEN	PAGE UP
NEXT SCREEN	PAGE DOWN
PREV WORD	CTRL/←
NEXT WORD	CTRL/→
COMPOSE	SHIFT/CTRL/Q

For example, to use AlphaWRITE's menu key F13 on AM-62 terminals, on the PC console, press CTRL/F3.

USING FUNCTION KEYS

Both supplied console terminal emulators, AMPCTerm and AMPCLiTE, included in AMOS 8.x have ADDITIONAL function key support features. Refer to the on-line help information provided with each emulator for information about these additional function key support features.

Appendix D - AMPC Command Summary

The following table summarizes commands you can enter to use the AMPC.EXE program.

Command	Function
AMPC/option	Launches AMOS from the Windows shortcut.
/C	Launch the Configuration Window - without booting AMOS
/L:{filename}	Boot AMOS using specified file. INI stored in the AMPC folder
/M:{filename}	Boot AMOS using specified file MON stored in the AMPC folder. If no /M switch is specified, the default AMPC.MON file is used in the booting process. This file must exist in the AMPC Folder.

The following table summarizes the AMOS commands specific to AMOS 8.x. For information on other AMOS commands, see the *AMOS System Commands Reference Manual*.

Command	Function
`FMDOS Windows Amos /option`	Copies the Windows file ***Windows*** to the AMOS file ***Amos***.
or	
`FMDOS Amos=Windows /option`	
`TODOS Amos Windows /option`	Copies the AMOS file ***Amos*** to the Windows file ***Windows***.
or	
`TODOS Windows=Amos /option`	
Options are:	
/NOD	Do not copy over the existing file (no delete)
/D	Overwrite the existing file
/Q	Ask for confirmation
/NOQ	No confirmation

Appendix E - SCSI Configuration Details

The Eagle 760 may have a SCSI interface optionally available. After a discussion of the type of SCSI devices that can be used, the following sections describe configuration rules for the SCSI bus, including mixing device types and termination issues. This card has both SCSI channels available on the rear panel with VHDCI connectors.

Never plug a SCSI device into the SCSI cable, or remove one from the cables, while system power is on. Doing so could seriously damage the device and the CPU board. The AMPC uses LVD and tolerant active negation on the SCSI busses, making the busses sensitive in these situations.

SCSI DEVICE TYPES

You can attach any supported SCSI device to either SCSI bus of the SCSI controller board, using the appropriate adapter if necessary, as described below. Supported devices include:

- Narrow single ended SCSI Drives (8 bit)
- Wide SCSI single ended SCSI drive (16 bit)
- Ultra wide LVD SCSI disk drives (fast 16 bit)
- ¼" streaming tape drives: AM-625, AM-626, AM-627, AM-628, AM-629 have a single ended interface
- The AM-650, AM-651, AM-652 SLR tape drives all have a Wide LVD SCSI interface.
- The AM-448 RAID subsystem uses a wide LVD interface (SCSI 160) and is normally attached to the first high speed SCSI bus. A special cable adapter can be ordered to make the first high speed SCSI bus accessible externally.

If you install a slow speed Single Ended interface drive on this channel, the whole bus slows down to the slowest device. Do not mix slow single ended interface devices and fast LVD devices on the SCSI bus.

For the Eagle 760 Server, the narrow bus devices are connected internally, such as the ¼" Streaming Tape drive. External connection to the PCI SCSI card requires a (VHDCI) interface cable. An External SCSI RAID system may be connected. Both busses are available on the rear panel, but do not need a SCSI terminator until an expansion cable is used. Then a terminator must be placed on the external subsystem back panel.

WIDE SCSI CONFIGURATION RULES

Each Wide SCSI bus allows up to 15 SCSI IDs, so the limiting factors are the number of device bays in the chassis and cabling considerations. ***Because of the high performance of each Wide SCSI bus, it is critical to follow the cabling specification strictly, or performance and reliability will suffer.***

The two cabling specifications, which affect the total number of devices, are:

- The total length of the cable cannot exceed three meters (approximately 10 feet).
- Each device must be separated on the SCSI-160 cable by 5.25" as a minimum.

The standard internal wide SCSI cable available for the Eagle 760 ensures adequate space between internal devices. One SCSI bus should be dedicated to interconnecting high-speed disk drives. This bus allows up to four internal LVD capable drives plus an internal terminator. The first SCSI bus is reserved for internal devices. A special cable may be purchased to install an external LVD RAID subsystem to a SCSI channel external to the Eagle 760 chassis.

NARROW DEVICES ON THE WIDE BUS

Any narrow SCSI device may be attached to a Wide bus by using a 50-pin to 68-pin adapter, PDB-00440-91. The adapter connects the device to the 68-pin cable. However, if you use both a narrow and a wide device, the narrow device's lower transfer rate slows down the entire bus, causing the wide device to lose its performance advantage.

INTERNAL SCSI TERMINATOR

The Eagle 760 requires the internal tape drive to have the terminator SIPs installed and placed at the end of the 50-pin SCSI cable. The second channel does not require a terminator on the back panel.

EXTERNAL SCSI TERMINATOR

The preferred method of terminating the SCSI bus for the Eagle 760 Server is the installation of an external terminator. The external terminator ***must be*** an "active LVD model" part number (PRA-00222-20). The main controller board terminates one end of the SCSI bus and the other end of the bus is terminated with the external active terminator. The SCSI controller board provides the termination power for the SCSI bus.

Figure E-1: Active LVD External Terminator

ATTACHING EXTERNAL DEVICES

To attach an external SCSI device, use the VHDCI cable to attach to an external raid or tape subsystem. Install the external active terminator in the unused SCSI I/O port of the external SCSI device at the physical end of the SCSI bus.

Attaching an external narrow SCSI device, such as a tape drive, to a Server using the Wide SCSI bus is a special case. Any narrow external device must be the last device on the cable, with all wide devices inside the chassis. Make sure all 16 lines of the Wide SCSI bus are terminated with an active terminator. To do so:

1. Use an external wide to narrow SCSI cable which actively terminates the "high" nine lines of the Wide SCSI bus. Alpha Micro offers this cable in both three foot and six-foot lengths (PDB-00440-80 and PDB-00440-81).
2. Plug the narrow active external terminator (PRA-00222-21) into the unused SCSI I/O port of the external device. This terminates the "low" half of the SCSI bus.

Notice that, in this configuration, the Wide SCSI active external terminator (PRA-00222-20), which is normally plugged into the external SCSI port, is not used.

SCSI DISPATCHER SOFTWARE

AMOS 8.x includes a SCSI dispatcher, which controls all SCSI devices in the system. The SCSI dispatcher is set up in the system initialization command file. The following AMOS 8.x specific command is added to the INI file **after** the JOBALC statements, but **before** the first DEVTBL statement:

```
SCZDSP  SCZPC.SYS          ;required
```

Appendix F - Eagle 760 INI's

The following files are sample INI files for the Eagle 760 booting for your reference.
The lines or commands in **BOLD** are AMOS 8.x specific statements.

AMSAFEBOOT.INI

```
; AMSAFE.BOOT INI file for AMPC 7.1 System
:T
LOAD SYSMSG.USA
LOAD TRMDEF.LIT[1,4]
LOAD AMO000.OVR[1,4]
TRMDEF VTM1,PCVTM=1,AM62c,200,200,200,EDITOR=10 ; console terminal
VER
QUEUE 10000             ; allow plenty of queue blocks
TRMDEF VTM2,PCVTM=2,AM62c,200,200,200,EDITOR=10
;TRMDEF COM1,PCCOM=1:19200,AM65,200,200,200,EDITOR=10
TRMDEF                  ;required
JOBS 5
JOBALC VTM1,VTM2,JOB1
SCZDSP SCZPC.SYS        ;required!
DEVTBL DSK
DEVTBL SUB
DEVTBL TRM,RES,MEM
DEVTBL /STR0            ;Tandberg streamer
BITMAP DSK
BITMAP SUB
ERSATZ ERSATZ.INI/B:20  ;reserve 20 more blank ersatz slots
MSGINI 50K
SYSTEM SYSMSG.USA
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR      ; for UPDates
SYSTEM DVR:DVD.DVR      ; for MAKDVD & DVDRES
System Dvr:DBD.dvr      ; for MAKBD, BDRES
SYSTEM
SET HEX
SET NOCACHE DSK0:
SET NOCACHE SUB0:
MOUNT DSK:
SETJOB VTM2,VTM2,500K,JOB.JIN
;SETJOB JOB1,SIO001,500K,JOB.JIN
SET PROMPT SAFE.BOOT:
MEMORY 0
```

AMPC.INI

```
; AMPC.INI System Start UP
```

```
; Date = 05/11/11 mpw
:T
LOAD SYSMSG.USA             ; ensures error messages displayed as text
LOAD AMO000.OVR[1,4]
LOAD TRMDEF.LIT[1,4]
SLEEP 4                     ; allow time for am113 to boot
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=10 ;Console boot terminal
VER
TRMDEF VTM2,PCVTM=2,AM62C,200,200,200,EDITOR=10
TRMDEF VTM3,PCVTM=3,AM62C,200,200,200,EDITOR=10
TRMDEF VTM4,PCVTM=4,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM5,PCVTM=5,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM6,PCVTM=6,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM7,PCVTM=7,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM8,PCVTM=10,AM62C,200,200,200,EDITOR=10
QUEUE 10000
;TRMDEF Ser002,PCSIO=4:38400,teltyp,200,200,200,,null ;optional serial-net
;TRMDEF COM1,PCCOM=1:19200,AM62C,200,200,200,EDITOR=10 ; pc com ports
;TRMDEF COM2,PCCOM=2:19200,AM62C,200,200,200,EDITOR=10
TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100                ; pc lpt port
TRMDEF NETSER,PSEUDO,NULL,80,80,80
TRMDEF TCPEMU,PSEUDO,NULL,80,80,80
TRMDEF NETLOG,PSEUDO,NULL,80,80,80
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
;TRMDEF VTSER,PSEUDO,NULL100,100,100      ;optional alphanet vt Server
;TRMDEF #5 100,100,100,EDITOR=5           ; optional 5 alphanet slots
TDVDEF AM62,AM62A,AM62C,AM65,AM65A,VT100,AM75   ; terminal drivers
TRMDEF                  ; Required
JOBS 40                 ; jobs allocated
JOBALC VTM1,VTM2,VTM3,VTM4,
;JOBALC VTM5,VTM6,VTM7
JOBALC JBPC1,JBPC2      ; com ports
JOBALC NETSER,TCPEMU,NETLOG,LPT1          ;VTSER

SCZDSP SCZPC.SYS        ;required for amos 8.x
DEVTBL DSK              ; amos boot c:\AMPC\AMPC.AMD file
DEVTBL NEW              ; c:\AMPC\new.amd
DEVTBL BIG              ; e:\AMPC\big1.amd
DEVTBL SUB              ; c:\AMPC\sub.amd
DEVTBL TRM,RES,MEM,/STR0
DEVTBL TLP0
BITMAP DSK
BITMAP NEW
BITMAP BIG
BITMAP SUB
ERSATZ ERSATZ.INI/B:20  ;reserve 20 more blank ersatz slots
MSGINI 100K
NETINI ETH101.NIN       ; Ethernet network for AMOS 8.x
;NETINI SER002.NIN      ; optional serial network 2
;
SYSTEM SYSMSG.USA
SYSTEM AMSORT.SYS
SYSTEM ISAM.SYS
SYSTEM ISAMP.SYS
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
```

```
SYSTEM DVR:DVD.DVR
; AMD pseudo disk drivers  are copies of  PCDSK.DVR
SYSTEM DVR:NEW.DVR
SYSTEM DVR:BIG.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR      ; for UPDates
;;  Only use dcache for AMOS formatted disk drives
;;  not necessary for .AMD files
;; SYSTEM DCACHE.SYS/N/M/U 2000K
;;  For AMOS formatted drives,
;;  use FixLog with SCZPC.DVR to create the SCZ driver
;; SYSTEM DVR:SCZ.DVR   ; for AMOS formatted drive
;; other program loads
SYSTEM RPC.SYS/N
SYSTEM RPCLOD.LIT
SYSTEM SYS:RUN.LIT
SYSTEM SYS:ORUN.LIT
SYSTEM BAS:FLOCK.SBR
;TCP stuff
SYSTEM TCP:IPCINI/N 200 200K
SYSTEM TCP:FTPD.LIT
SYSTEM TCP:FTPD.RTI
SYSTEM RTI.LIT
SYSTEM DVR:TLP.DVR
SYSTEM TCP:LPR.LIT
SYSTEM TCP:LPR.RTI
SYSTEM TCP:TAMED.LIT
SYSTEM TCP:TAMED.RTI
SYSTEM TCP:TELNED.LIT
SYSTEM TCP:TELNED.RTI
SYSTEM
SMEM 120M               ;Increase for more telnet jobs
LOG DEMO
SET HEX
SET DSKERR
MOUNT DSK:
MOUNT SUB:
MOUNT BIG:
SET NOCACHE DSK0:       ;for AMD dsk files
SET NOCACHE SUB0:       ;for AMD dsk files
SET NOCACHE BIG0:
;
SETJOB VTM2,VTM2,500K,JOB.JIN
SETJOB VTM3,VTM3,500K,JOB.JIN
SETJOB VTM4,VTM4,500K,JOB.JIN
;SETJOB VTM5,VTM5,500K,JOB.JIN
;SETJOB VTM6,VTM6,500K,JOB.JIN
;SETJOB VTM7,VTM7,500K,JOB.JIN
;;SETJOB VTM8,VTM8,500K,JOB.JIN
;
SETJOB JBPC1,COM1,500K,JOB.JIN
SETJOB JBPC2,COM2,500K,JOB.JIN
SETJOB LPT1,DUMMY,20k,LTPTINI LPT1.PIN
WAIT LPT1
SETJOB NETSER,NETSER,100K,NETSER.JIN
WAIT NETSER
;setjob vtser,vtser,100k,vtser.jin
;wait vtser
SETJOB NETLOG,NETLOG,50K
SETJOB TCPEMU,TCPEMU,3M,TCP:GOTCP.CMD
```

```
WAIT TCPEMU
sleep 1
 JOBLVL TCPEMU,2  ; set the job level to 2 for tcpemu for quicker network
response
sleep 1
 JOBLVL TELNED,2  ; set the job level to 2 for telned for quicker telned
terminal response.
LOG SYS:
SET prompt AMPC>
MEMORY 0          ;Local AMPC.INI file in use
```

E18SIO.INI

```
; E18SIO.INI System Start UP, for 18 PC PC-COM ports, plus Am113 ports,
Normally for AMPC
:T
LOAD SYSMSG.USA             ; ensures error messages displayed as text
LOAD AMO000.OVR[1,4]
LOAD TRMDEF.LIT[1,4]
SLEEP  4                    ; allow time for am113 to boot
TRMDEF VTM1,PCVTM=1,AM62C,200,200,200,EDITOR=10
VER
QUEUE 10000
TRMDEF VTM2,PCVTM=2,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM3,PCVTM=3,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM4,PCVTM=4,AM62C,200,200,200,EDITOR=10
;TRMDEF VTM5,PCVTM=5,AM62C,200,200,200,EDITOR=10
;on motherboard
TRMDEF COM1,PCCOM=1:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM2,PCCOM=2:19200,AM62C,200,200,200,EDITOR=10
;8-PORT     (cable A to USB1) or PCI board
TRMDEF COM3,PCCOM=3:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM4,PCCOM=4:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM5,PCCOM=5:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM6,PCCOM=6:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM7,PCCOM=7:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM8,PCCOM=10:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM9,PCCOM=11:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM10,PCCOM=12:19200,AM62C,200,200,200,EDITOR=10
;8-PORT     (cable B to USB2) or second PCI board
TRMDEF COM11,PCCOM=13:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM12,PCCOM=14:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM13,PCCOM=15:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM14,PCCOM=16:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM15,PCCOM=17:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM16,PCCOM=20:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM17,PCCOM=21:19200,AM62C,200,200,200,EDITOR=10
TRMDEF COM18,PCCOM=22:19200,AM62C,200,200,200,EDITOR=10
;TRMDEF LPT1,PCLPT=1,TELTYP,100,100,100
;TRMDEF VTSER,PSEUDO,NULL,80,80,80
TRMDEF NETSER,PSEUDO,NULL,80,80,80
TRMDEF TCPEMU,PSEUDO,NULL,80,80,80
TRMDEF NETLOG,PSEUDO,NULL,80,80,80
TRMDEF DUMMY,PSEUDO,NULL,80,80,80
TRMDEF                              ;Required
JOBS 40
JOBALC VTM1,VTM2,VTM3,VTM4
```

```
;JOBALC VTM6,VTM7,VTM8;VTM5
JOBALC JBPC1,JBPC2
JOBALC JBPC3,JBPC4,JBPC5,JBPC6,JBPC7,JBPC8,JBPC9,JBPC10
JOBALC JBPC11,JBPC12,JBPC13,JBPC14,JBPC15,JBPC16,JBPC17,JBPC18
JOBALC TCPEMU,NETLOG,NETSER          ;VTSER,LPT1
SCZDSP SCZPC.SYS
DEVTBL DSK
;DEVTBL NEW
DEVTBL SUB
DEVTBL TRM,RES,MEM,/STR0
BITMAP DSK
;BITMAP NEW
BITMAP SUB
ERSATZ ERSATZ.INI/B:20        ;reserve 20 more blank ersatz slots
MSGINI 100K
NETINI ETH101.NIN
SYSTEM SYSMSG.USA
SYSTEM AMSORT.SYS
SYSTEM ISAM.SYS
SYSTEM CMDLIN.SYS
SYSTEM DVR:TRM.DVR
SYSTEM DVR:MEM.DVR
SYSTEM DVR:RES.DVR
SYSTEM DVR:NEW.DVR
SYSTEM DVR:SUB.DVR
SYSTEM DVR:UPD.DVR            ; for UPDates
SYSTEM DVR:DVD.DVR            ; for DVD & MAKDVD
SYSTEM DVR:ACD.DVR
SYSTEM DVR:STR.DVR
SYSTEM RPC.SYS/N
SYSTEM RPCLOD.LIT
SYSTEM RUN.LIT
SYSTEM ORUN.LIT
;TCP stuff
SYSTEM TCP:IPCINI/N 200 200K
SYSTEM TCP:FTPD.LIT
SYSTEM TCP:FTPD.RTI
SYSTEM TCP:TELNED.LIT
SYSTEM TCP:TELNED.RTI
SYSTEM RTI.LIT
SYSTEM
SMEM  80M
LOG DEMO
SET HEX
SET DSKERR
MOUNT DSK:
MOUNT  SUB:
;MOUNT NEW:
SETJOB VTM2,VTM2,500K,JOB.JIN
;SETJOB VTM3,VTM3,500K,JOB.JIN
;SETJOB VTM4,VTM4,500K,JOB.JIN
;SETJOB VTM5,VTM5,500K,JOB.JIN
SETJOB JBPC1,COM1,500K,JOB.JIN
SETJOB JBPC2,COM2,500K,JOB.JIN
SETJOB JBPC3,COM3,500K,JOB.JIN
SETJOB JBPC4,COM4,500K,JOB.JIN
SETJOB JBPC5,COM5,500K,JOB.JIN
SETJOB JBPC6,COM6,500K,JOB.JIN
SETJOB JBPC7,COM7,500K,JOB.JIN
SETJOB JBPC8,COM8,500K,JOB.JIN
```

```
SETJOB JBPC9,COM9,500K,JOB.JIN
SETJOB JBPC10,COM10,500K,JOB.JIN
SETJOB JBPC11,COM11,500K,JOB.JIN
SETJOB JBPC12,COM12,500K,JOB.JIN
SETJOB JBPC13,COM13,500K,JOB.JIN
SETJOB JBPC14,COM14,500K,JOB.JIN
SETJOB JBPC15,COM15,500K,JOB.JIN
SETJOB JBPC16,COM16,500K,JOB.JIN
SETJOB JBPC17,COM17,500K,JOB.JIN
SETJOB JBPC18,COM18,500K,JOB.JIN
;
;SETJOB LPT1,DUMMY,20K,LPTINI LPT1.PIN
;WAIT LPT1
;SETJOB NETSER,NETSER,100K,NETSER.JIN
;WAIT NETSER
;SETJOB VTSER,VTSER,100K,VTSER.JIN
;WAIT VTSER
SETJOB NETLOG,NETLOG,50K
SETJOB TCPEMU,TCPEMU,3M,TCP:GOTCP.CMD
LOG OPR: DEMO
sleep 1
 JOBLVL TCPEMU,2  ; Set job level to 2 for tcpemu  for better response
sleep 1
 JOBLVL TELNED,2  ; Set job level to 2 for telned for better terminal response
LOG SYS:
set prompt ip152>
MEMORY 0          ;Local AMPC.INI file in use
```

Document History

Revision	Date	Description
A00	June 2005	Start of writing this manual
A01	Nov 2005	Added information for Eagle 760 Systems and AMPC 7.1 updates.
A02	Jan 2006	Added new information and Pictures.
A03	Feb 2007	Updated for USB
A04	May 2011	Updated for Windows 7

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